CONSEIL PERMANENT INTERNATIONAL POUR
L'EXPLORATION DE LA MER
CHARLOTTENLUND SLOT — DANEMARK

RAPPORTS
ET
PROCÈS-VERBAUX DES RÉUNIONS

VOLUME CXXIX

1ÈRE PARTIE
PROCÈS-VERBAUX
(OCTOBRE — 1950)

2ÈME PARTIE
RAPPORT ADMINISTRATIF
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RAPPORTS

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1ÈRE PARTIE
PROCÈS-VERBAUX

(OCTOBRE—1950)

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TRENTE-HUITIÈME RÉUNION

COPENHAGUE — OCTOBRE 1950

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Charlottenlund Slot, Charlottenlund.
M. le Dr. Å. V. Tåning;
Laboratoire Marine-biologique, Membre de la Commission Danoise pour l'Exploration de la Mer;
Charlottenlund Slot, Charlottenlund.
M. le Dr. P. Jespersen;
Membre de la Commission Danoise pour l'Exploration de la Mer, Laboratoire Planctonique;
Charlottenlund Slot, Charlottenlund. (Suppléant).

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M. J. M. Besseteaux;
Chef du Secrétariat à la Direction des Pêches Maritimes, Ministère de la Marine Marchande;
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Fisheries Adviser, Ministry of Agriculture and Fisheries;
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Bury St. Edmunds, Suffolk.
M. J. E. de Watteville, C.B.E.;
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M. A. E. J. Went, D. Sc., Ph. D., A.R.C.S.;
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---

* Empêché d'assister à la réunion.

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CARLIN, M. le Dr. B.; *Lustigknoppsvägen 1, Falun.*
HESSLE, M. le Dr. CHR.; Département des Pêches, *Göteborg.*
HULT, M. le Dr. JÖRAN; Chef du Département des Pêches, *Göteborg.*
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Mlle le Dr. M. REHDER, Secrétaire (Information).
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DE WAAL, M. le Dr.; Attaché Agricole, *Copenhague.*

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AASEN, M. OLAV; Institut pour l'Exploration de la Mer, *Bergen.*

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DE WAAL, M. le Dr.; Attaché Agricole, *Copenhague.*

Suède:

ALANDER, M. le Dr. HARALD; Département des Pêches, *Göteborg.*

* Empêché d'assister à la réunion.

I. PROCÈS-VERBAL

According to resolution at the Council Meeting in October 1949, the Procès-Verbal will in future be shortened, containing principally material of paramount interest for scientists inside and outside the Council.

REPORT

of

THE THIRTY-EIGHTH MEETING OF THE COUNCIL

First Sitting: Monday, 2nd October 1950, at 10 a. m.

Present: Departementschef of the Ministry of Fisheries Mr. B. Dinesen, Members and Experts, Observers and Guests (*vide* list pp. 6—9)

The President opened the Meeting and paid tribute to the memory of the late Président d'Honneur, Mr. Henry G. Maurice, President of the Council for no fewer than 18 years, and of the late Dr. R. S. Clark, Chairman of the Consultative Committee. The audience stood for a moment in silence.

The President then welcomed new attendants, especially Observers and Guests.

A telegram was sent to His Majesty the King of Denmark and to the widows of the two deceased members.

Agenda (point 2), the General Secretary reported that all countries except Poland had now agreed to renew their participation for a further period of five years[1]) and that Belgium had agreed to an increase of 50% in the contribution.

Agenda (point 3), Mr. Dobson gave a brief summary of the present situation with respect to the Overfishing Convention.

Agenda (point 4), Mr. Dobson said that the Bureau, at its meeting in May, had revised the Statutes. The revised edition was laid round the table and would be formally presented for approval at the final sitting.

Agenda (point 5), the General Secretary drew attention to the Administrative Report, just distributed, and asked for comments at the final sitting.

Agenda (point 7), Mr. Dobson referred to the estimated Statement of Accounts. (The final Statement of Accounts appears on page 4 in part II of this report).

The meeting adjourned at 10.30 a.m.

[1]) Suivant une note du Ministère des Affaires Etrangères du Danemark, en date du 12.II.1951, "la Pologne ne désire pas participer aux travaux du Conseil".

Second Sitting, attended by Delegates only, followed immediately.

The President reminded the Delegates that in accepting the Precidency the previous year, it was on the understanding that it was for one year only and placed the chair at disposal. At the proposal of Professor le Gall seconded by Mr. Dobson the President was re-elected.

The President thanked the members for their renewed confidence in him and suggested (1) the re-election of the First Vice-President, Mr. Dobson, and (2) of the three Vice-Presidents, Messrs. Lienesch, Ramalho and le Gall. Agreed.

The meeting adjourned at 11.00 a.m.

Third Sitting: Tuesday, 10th October, at 11.00 a. m.

The President, Dr. K. A. ANDERSSON, in the Chair.
Present: Members, Experts, Observers, Guests.

Agenda (point 9), the President read the telegram received from His Majesty the King of Denmark.

Agenda (point 10), the President called on Mr. DOBSON who shortly mentioned the alterations in the Statutes, which were agreed.

Turning to the Rules, Mr. DOBSON said they were practically a repetition of the former Rules, but suggested a few alterations which were accepted[1]).

Agenda (point 11), the Accounts for 1948/49 were finally adopted.

Agenda (point 12), the Administrative Report for 1949/50 was adopted.

Agenda (point 13). The President referred to the Reports and Recommendations of Committees which were placed round the table and called on the Chairman of the Consultative Committee, Mr. GRAHAM, who commented on each recommendation of the Consultative Committee (in which were incorporated all recommendations of the various committees), including a proposed re-organisation of Committees.

The President said that this re-organisation had been carefully considered by the Bureau who were agreed that the scheme having been accepted should be distributed to all Delegates, to discuss it with their colleagues in each country. Delegates were invited to send in their suggestions, through the Chairman of the Consultative Committee, so that at its meeting in May the Bureau could approve the new scheme to come into operation as from the next Council Meeting. The re-organisation scheme was accepted for circulation as printed on pp. 27—28.

[1]) The Statutes and Rules are printed separately.

Agenda (point 14), Mr. DOBSON presented the revised Estimates (see p. 11). A reduction of kr. 3,000 under Incidentals was due to the desire of the new Chairman of the Consultative Committee to accept his expenses only, estimated at kr. 1,000. Travelling Expenses had been raised by the proposal to invite Dr. H. O. BULL to attend the next year's Special Scientific Meeting. Publications remained at kr. 57,000 although there was no doubt that they ought to be increased. In respect of receipts no contribution from Poland was expected, but the estimate for sale of publications had been raised owing to the *Herring Atlas* which would not be distributed free of charge to the usual extent. On Mr. DOBSON's recommendation the Estimates for 1950/51 were accepted.

Agenda (point 15), the necessary nominations took place. Dr. ROSÉN, Mr. LUMBY and Dr. JESPERSEN were re-elected Editors for Statistics, Journal du Conseil and Zooplankton Sheets respectively. For members of Finance Committee and Chairmen of Scientific Committees see p. 23.

Agenda (point 16), the next meeting of the Council was fixed for Copenhagen from October 1st 1951.

Lectures followed by the Observers: Mr. BLACKBURN, Dr. NEEDLER, Dr. WALFORD and Mr. MOGENS JUL. They all gave information on the oceanographical investigations in their own countries and stressed the importance of co-operation with the International Council for the Exploration of the Sea.

The Meeting concluded with vote of thanks to the Danish Government, the President, the First Vice-President, the General Secretary and the Staff.

The meeting terminated at 1.00 p.m.

Estimates for the Financial Year $^{1}/_{11}$ 1950—$^{31}/_{10}$ 1951.

EXPENDITURE

	D. kr.	D. kr.
I. Incidentals		
1. President	6,000.00	
2. Editor of the Journal	3,000.00	
3. Assistance to Editor of the Journal	1,500.00	
4. Chairman of Consultative Committee	1,000.00	
5. Chairmen and Vice-Chairman of Committees	32,000.00	
6. Editor of Statistics	2,000.00	
7. Editor of Plankton Sheets	1,000.00	
		46,500.00
II. Headquarter Staff		
1. General Secretary	9,696.00	
2. Editorial Assistance	3,000.00	
3. Assistant Secretary (General)	10,676.00	
4. Assistant Secretary (Information)	9,608.00	
5. Statistical Secretary	7,944.34	
6. Clerical Assistant	7,018.00	
7. Clerical Assistance	5,608.00	
		53,550.34
III. Hydrographical Staff		
1. Hydrographer	12,604.00	
2. Clerical Assistance	5,608.00	
3. Assistance	656.00	
4. Card Index	1,500.00	
		20,368.00
IV. Office Expenses		19,000.00
V. Travelling Expenses		9,000.00
VI. Printing and Distribution		57,000.00
VII. Pension Fund		4,500.00
VIII. Extraordinary Expenses, Extraordinary cost-of-living bonus		7,971.90
IX. Special Plankton Expenditure		10,000.00
		227,890.24

RECEIPTS

		D. kr.	D. kr.
I. Contributions			
France		30,000.00	
Great Britain		30,000.00	
Belgium		15,000.00	
Denmark		15,000.00	
Holland		15,000.00	
Iceland		15,000.00	
Ireland		15,000.00	
Norway		15,000.00	
Portugal		15,000.00	
Spain		15,000.00	
Sweden		15,000.00	
Finland		7,500.00	
			202,500.00
II. Interests			
On Bank Deposits	ca.	500.00	
On Investments	-	5,000.00	
			ca. 5,500.00
III. Sale of Publications			ca. 10,000.00
From Reserve Fund			9,890.24
			227,890.24

Estimate of Pension Fund Account for 1950—51.

EXPENDITURE

	D. kr.
Miss Hansted's pension	5,264.04
Extraordinary cost-of-living bonus	504.00
Estimated balance as per Oct. 31, 1950	107,619.53
	113,387.57

RECEIPTS

	D. kr.
Balance on November 1st 1950	108,854.82
Estimated interests in bank	ca. 50.00
„ „ on investments	4,482.75
	113,387.57

Experts engaged on Fisheries Research in the Council's Area.

Name and Title	Special Subjects	Address
Belgium.		
Leloup, E., Dr., Conservateur, Directeur de l'Institut Maritime, Ostende	Biologie de la faune marine	31, Rue Vautier, Bruxelles.
Gilis, Ch., adjoint technique de l'Institut Maritime, Ostende	Recherches sur le hareng guai — le hareng plein. "Overfishing"	Zuidstraat, 16, Oostende.
Denmark.		
Blegvad, H., Dr., Director	Biology. Bottom fauna; fish food	Dansk Biologisk Station, Charlottenlund Slot, Charlottenlund.
Poulsen, E. M., Dr.	Biology. Crustaceans	
Jensen, Aage J. C., Dr.	Biology. Fluctuations in fishery yields	
Kirkegaard, J. B., Cand. mag.	Biology. Bottom invertebrates	
Knudsen, J., Cand. mag.	Biology. Molluscs	
Otterstrøm, C. V., Mag. scient., Head of Department	Freshwater fish. Pollution	Dansk Biologisk Station, Afd. for Ferskvandsfiskeri, Charlottenlund Slot, Charlottenlund.
Larsen, K., Cand. mag.	Biology of Salmon and Trout	
Rasmussen, C. J., Cand. mag.	Biology of freshwater fish	
Andersen, Th., Cand. mag.	Biology of freshwater fish	
Tåning, Å. V., Dr., Director	Oceanography. Ichthyology	Marinbiologisk Laboratorium, Charlottenlund Slot, Charlottenlund.
Bertelsen, E., Mag. scient.	Bathypelagic fish	
Ege, V., Dr.	Racial investigations. Eel, Zoarces. Taxonomy, phylogeny and biogeography of oceanic fish	
Ursin, E., Mag. scient.	Marine biology	
Jespersen, P., Dr., Head of Department	Zooplankton. Copepods; food of Herring	Plankton Laboratoriet, Charlottenlund Slot, Charlottenlund.
Grøntved, J., Mag. scient.	Phytoplankton, northern forms	
Hermann, F., Cand. mag.	Hydrography	Hydrografisk Laboratorium, Charlottenlund Slot, Charlottenlund.
Strubberg, A., Fuldmægtig	Statistics	Fiskeriministeriet, Borgergade 16, Copenhagen.
Spärck, R., Prof., Dr., Director	Zoology. Oysters	Zoologisk Museum, Krystalgade, Copenhagen.
Jensen, Ad. S., Prof., Dr.	Ichthyology. Greenland fisheries	
Bruun, A. Fr., Dr.	Marine biology. Oceanography	
Thorson, G., Dr.	Ecology of marine invertebrates	
Hansen, P. M., Dr.	Greenland Cod	Grønlands Fiskeriundersøgelser, Charlottenlund Slot.
Kreutzmann, Jens	Biology, Greenland fisheries	
Smidt, E., Mag. scient.	Greenland fisheries. Ecology of marine invertebrates	
Thomsen, H., Cand. mag.	Hydrography	Meteorologisk Institut, Ordrup per Charlottenlund.
Steemann Nielsen, E., Prof.	Phytoplankton	Danmarks farmaceutiske Højskole, Universitetsparken, Copenhagen.
Kiilerich, A., Cand. mag.	Hydrography of Greenland waters	Grøndalsvej 66, Copenhagen.
Finland.		
Järvi, T. H., Dr., Prof.	Salmonidae. Baltic Herring	Byrån f. Fiskeriundersökninger, Mariegatan 23, Helsinki.
Halme, E., Dr.	Plankton. Baltic Herring	
Hurme, S.	Cyprinidae, Esox	
Segerstråle, S., Dr.	Bottom fauna. Crustacea	Norra Järnvägsgatan 13, Helsinki.
Purasjoki, K., Mag. phil.	Plankton. Bottom fauna	
Luther, A., Dr., Prof.	Turbellaria	
Välikangas, I., Dr., Prof.	Plankton	
Segerstråle, Curt, Mag. phil.	Cyprinidae, Esox	

Name and Title	Special Subjects	Address
Finland (continued).		
Jurva, R., Prof., Director	Physical Oceanography	Havsforskningsinstitutet, Observatoriegatan 2, Helsinki.
Granqvist, G., Dr.	Physical Oceanography	
Hela, I., Dr.	Physical Oceanography	
Simojoki, H., Dr.	Hydrology	
Lisitzin, Eugenie, Dr.	Physical Oceanography	
Koroleff, F., Dr.	Chemistry of Sea Water	
Palosuo, E., Mag.	Ice Investigations	
Buch, K., Prof.	Chemistry of Sea Water	Arkadiagatan 17 A, Helsinki.
Palmen, E., Prof.	Physical Oceanography	Högbergsgatan 1 B, Helsinki.
Renqvist, H., Dr.	Physical Oceanography	Museigatan 21 A, Helsinki.
Stenij, E., Prof.	Sea Level	Brändövägen 28, Helsinki.
France.		
le Gall, Jean, Agrégé de l'Université, Ingénieur Chimiste, Directeur de l'Office Scientifique des Pêches..	Biologie marine. Thonidés, Clupéidés. Hydrologie générale	Office Scientifique et Technique des Pêches Maritimes, 59, Av. Raymond Poincaré, Paris (16ème).
Desbrosses, P., L.ès-Sc., Inspecteur Général	Océanographie. Animaux marins comestibles	
Faure, L., L.ès-Sc., Chef de Laboratoire	Sprat. Dorade. Invertébrés marins..	
Fleury, Jacqueline, L.ès-Sc.	Plancton animal (Chétognathes)	
Lambert, L., Dr. pharm., Inspecteur Général	Biologie des Mollusques comestibles	
Morice, J., L.ès-Sc.	Biologie des Sparidés et des Crustacés	
Ancellin, J., Dr. vét., Chef de Laboratoire	Harengs. Plies. Poissons comestibles	Laboratoire de l'Office des Pêches, B.P. 42. Boulogne s/Mer, Pas-de-Calais.
Creach, P., Dr.ès-Sc., Dr. pharm., Chef de Laboratoire	Clupéidés. Triglidés. Physiologie de la nutrition	Lab. de l'Off. des Pêches, Faculté des Sciences, 20 Cours Pasteur, Bordeaux.
Letaconnoux, R., L.ès-Sc., Chef de Laboratoire	Merlu. Morue. Chinchard. Autres poissons comestibles	Lab. de l'Off. des Pêches, 74, Allée du Mail, La Rochelle.
Furnestin, J., Dr.ès-Sc.	Océanographie physique et biologique. Clupéidés. Thonidés	Service Scientifique des Pêches Maritimes, Casablanca, Maroc.
Bouxin, H., Agrégé de l'Université, Dr.ès-Sc.	Ecologie marine. Plancton littoral	Lab. Marit. du Collège de France, Concarneau, Finistère.
Drach, P., Prof. à la Faculté des Sciences, Paris. Sous-Directeur	Crustacés. Ecologie néritique	Station Biologique, Roscoff, Finistère.
Pérès, J. M., Professeur à la Faculté des Sciences de Marseille	Invertébrés marins	Station Biologique, Endoume, Marseille.
Petit, G., Dr.ès-Sc., Prof. à la Sorbonne, Chef de Laboratoire	Ecologie des eaux. Migration des poissons	Laboratoire Arago, Banyuls s/Mer, Pyrénées Orient.
Dieuzeide, R., Dr.ès-Sc., Dr. en Médecine	Clupéidés. Thonidés	Station d'Aquiculture et de Pêche, Castiglione, Algérie.
Heldt, Jeanne, Dr.ès-Sc.	Crustacés. Plancton	Station Océanographique, Salammbô, Tunisie.
Heldt, H., Directeur	Thonidés. Clupéidés. Faune des lacs littoraux	
Cadenat, J., L.ès-Sc.	Systématique et Biologie des poissons. Echinodermes	Laboratoire de Biologie Marine de Gorée, Dakar (Sénégal).
Monod, T., Dr.ès-Sc., Directeur	Crustacés et Poissons	Institut Français d'Afrique Noire, Dakar (Sénégal).
Rouch, Jules, Prof. Honoraire, Directeur	Océanogr. physique. Questions polaires	Musée Océanographique de Monaco, Monaco-Ville (Principauté).

Name and Title	Special Subjects	Address
France (continued).		
Dyèvre, H., Ingénieur Général, Directeur	Océanogr. physique. Hydrographie	Service Hydrogr. de la Marine, 13, Rue de l'Université, Paris.
Gougenheim, A., Ingénieur Hydrographe en Chef de la Marine, Chef de Section	Océanographie physique. Hydrologie.	
Bertin, L., Agrégé, Dr.ès-Sc., Prof. au Mus. Nat. Hist. Natur	Océanographie. Poissons apodes et leptocéphales. Poissons abyssaux	57 Rue Cuvier, Paris.
Teissier, G. Professeur à la Faculté des Sciences	Biologie marine	1, Rue Victor Cousin, Paris.
Prenant, M., Professeur à la Faculté des Sciences	Biologie marine. Physiologie	
Budker, P., Sous-Directeur des Pêches Coloniales au Mus. Nat. Hist. Natur	Biologie marine	61, Rue de Buffon, Paris.
Fage, L., Prof. au Mus. Nat. Hist. Natur. et à l'Inst. Océanogr.	Biologie marine	
Forest, J., L.ès-Sc., Assistant au Mus. Nat. Hist. Natur.	Crustacés	
Fontaine, M., Dr.ès-Sc.	Physiologie des poissons migrateurs	25, Rue Pierre Nicole, Paris.
Larrieu, J., Ingénieur des Eaux et Forêts	Poissons migrateurs	61, Rue de Varenne, Paris.
Legendre, R., Dr.ès-Sc., Prof. à l'Inst. Océanogr.	Océanographie physique et biologique	27, Rue d'Alésia, Paris.
Bernard, F., Dr.ès-Sc., Professeur de Zoologie	Plancton des mers chaudes	Faculté des Sciences, l'Université, Alger, Algérie.
Vibert, R., Inspecteur des Eaux et Forêts	Saumon et Truite	8, Rue Adoue, Oloron-St-Marie (B.P.)
Great Britain.		
England.		
Graham, M., O.B.E., M. A.	Population studies of fish stocks	Fisheries Laboratory, Lowestoft.
Wimpenny, R. S., M. Sc.	Plankton ecology. Plaice biology	
Lumby, J. R., Lt. Cdr.	Hydrography	
Lee, A. J., B. A.	Hydrography (Arctic)	
Simpson, A. C., B. Sc.	Census of Plaice eggs	
Cattley, J. G., M. Sc.	Zooplankton	
Cushing, D. H., M. A.	Phytoplankton. Plankton physiology	
Trout, G. C., B. Sc.	Arctic Cod and Haddock	
Corlett, J., M. Sc.	Arctic Plankton	
Hodgson, W. C., Dr.	Pelagic fish	
Richardson, I. D., B. Sc.	Pelagic fish	
Beverton, R. J. H., M. A.	Population studies on Arctic fish stocks	
Margetts, A. R., B. A.	Comparative fishing. Fish migrations	
Russell, F. S., F. R. S.	Zooplankton. Hydromedusae	Marine Biol. Assoc., Citadel Hill, Plymouth.
Atkins, W. R. G., Dr., F. R. S.	Plant and general physiology. Radiation. Preservation of textile fibres	
Harvey, H. W., Dr., F. R. S.	Chemical constitution of sea water	
Steven, G. A., B. Sc.	Fish, fisheries and bottom fauna	
Wilson, D. P., M. Sc.	Polychaete development. Larval settlement. Marine aquaria	
Cooper, L. H. N., Dr.	Chemical and physical oceanography	
Spooner, G. M., M. A.	General zoology. Fauna of estuaries. Gammaridae	
Parke, Mary W., Dr.	Algae	
Hill, D. K., M. A.	Physiology of marine animals	
Corbin, P. G., B. A.	Zooplankton	
Vevers, H. G., B. A.	Breeding biology. Echinoderms	

Name and Title	Special Subjects	Address
Great Britain (continued).		
Rae, K. M., Officer-in-Charge	Plankton	Department of Oceanography, University College, Hull.
Glover, R. S.	Plankton	
Vane, F. R.	Plankton	
Hardy, A. C., Prof., F. R. S.	Fisheries and Plankton	Dept. of Zoology, Oxford University.
Carruthers, J. N., Dr.	Hydrography	Admiralty, Hydrogr. Dept., Oxgate Lane, Cricklewood, London N.W. 2.
Savage, R. E.	Shellfish and public health	Fisheries Experiment Station, Conway.
Sherwood, H. P., B. A.	Mussel cleansing	
Cole, H. A., Dr.	Oyster research	
Knight-Jones, E. W., B. Sc.	Oyster Pests	Mar. Biol. Stat., Bangor, Carnavonshire.
Frost, W. E., Dr.	Eel and Salmon	Freshwater Biol.Assn., The Ferry House, Far Sawrey, Ambleside, Westmorland.
Orton, J. H., Prof., F. R. S.	Sex in Salmon	Department of Zoology, The University, Liverpool.
Jones, J. W., Dr.	Sex in Salmon	
Crofton, H. O., Dr.	Parasitism in Trout	
Fraser, P. G., Miss, B. Sc.	Parasitism in Trout	
Spaul, E. A., Prof.	Parasitism in fish	Department of Zoology, The University, Leeds.
Pentelow, F. T. K., M. A.	Salmon investigations	Ministry of Agriculture and Fisheries. St. Stephen's House, Victoria Embankment, London, S.W. 1.
Hartley, W. C., B. Sc.	Salmon investigations	
Allan, I. R. H., B. A.	Salmon investigations	
Swain, A., B. Sc.	Salmon investigations	
Alabaster, J. S., B. Sc.	Salmon investigations	
Erichsen Jones, J., Dr.	Toxicity of Metallic salts to fish	Department of Zoology, University College of Wales, Aberystwyth.
Mackintosh, N. A., Dr., Director of Research	Whaling research	"Discovery" Inv., Queen Anne's Chamb., 41, Tothill Street, London S.W. 1.
Scotland.		
Lucas, C. E., Dr., F. R. S. E., Director	Marine Biology (Plankton)	Scottish Home Department, Marine Laboratory, Wood Street, Torry. Aberdeen.
Wood, H., Dr., F. R. S. E., Deputy Director	Herring	
Craig, R. E., B. Sc.	Physics	
Ellis, R. W., B. Sc.	Whiting	
Fraser, J. H., Dr., F. R. S. E.	Plankton	
Johnston, R., Dr.	Chemistry	
Jones, R., B. Sc.	Haddock	
Mcintyre, A. D., B. Sc.	Halibut. Bottom Fauna	
Parrish, B. B., B. Sc.	Herring. Haddock	
Pope, J. A., M. A.	Statistics	
Rae, B. B., Dr.	Flatfish	
Ritchie, A., Dr.	Bottom Fauna. Seining	
Saville, A., B. Sc.	Plankton (Egg and Fish Larvae)	
Tait, J. B., Dr., F. R. S. E.	Hydrography	
Thomas, H. J., Dr.	Bottom Fauna. Crustacea	
Pyefinch, K. A., M. A., Officer-in-Charge	Salmon and Trout and Zooplankton.	Scottish Home Department, Brown Trout Laboratory, Pitlochry, Scotland.
Stuart, T. A., B. Sc.	Trout	
Holden, A. V., B. Sc.	Chemistry	
Prowse, G. A., B. Sc.	Botany. Phytoplankton	
Macfarlane, P. R. C., B. Sc., Chief Inspector Salmon Fisheries	Salmon	Scottish Home Department, St. Andrew's House, Edinburgh, 1.
Beak, T. W., B. Sc. Assistant Inspector of Salmon Fisheries	Salmon	
Ford, E., F. R. S. E. Director	Fish	Scottish Marine Biological Association, Marine Station, Millport, Isle of Cumbrae.
Orr, A. P., Dr., F. R. S. E.	Plankton	
Marshall, Sheina M., Miss, Dr., F. R. S. E.	Plankton	
Barnes, H., Dr.	Hydrography	
Pike, R. B., Dr.	Crustacea	
Millar, R. H., Dr.	Oysters	
Gauld, D. T., Dr.	Plankton	
Powell, H. T., B. Sc.	Algae	
Bagenal, T. B., B. A.	Fish	

Name and Title	Special Subjects	Address
Great Britain (continued).		
Rae, K S. M., B. Sc., Officer-in Charge	Plankton	Scottish Marine Biological Association, Oceanographic Laboratory Leith.
Henderson, G. T. D., Dr.	Plankton	
Rees, C. B., M. Sc.	Plankton	
Glover, R. S., B. Sc.	Plankton	
Vane, F. R., B. Sc.	Plankton	
Schurr, H. R., B. Sc.	Plankton	
Stephen, A. C., Dr., F. R. S. E.	Marine Bottom Fauna	Royal Scottish Museum, Edinburgh.
Ritchie, J., Prof., C. B. E., F. R. S. E.	Biology of Fisheries	Zoology Department, Edinburgh University.
Friend, G. F., B. Sc., F. R. S. E.	Salmonid Fish and Parasitic Copepods.	
Steven, D. M., Dr.	Fish culture; properties of skin photoreceptors of vertebrates	
Kille, R. A., B. Sc.	Early Development of Dermal Bones in Teleosts	
Smyth, J. C., Dr.	Ecology of Marine Muds. Feeding of Lamellibranchs	
Yonge, C. M., Prof., F. R. S.	Mollusca, Crustacea, Madreporaria	Zoology Department, Glasgow University.
Owen, G., B. Sc.	Mollusca	
Slack, H. D., Dr.	Freshwater Biology	
Russell Hunter, W., B. Sc.	Freshwater Biology	
Badcock, R. M., Miss, B. Sc.	Freshwater Biology	
Conway, E., Mrs, Dr.	Marine Foreshore Ecology	Botany Department, Glasgow University.
Wynne-Edwards, V. C., Prof. F. R. S. E.	Freshwater Fish	Zoology Department, Aberdeen University.
Neill, R. M., Dr., F. R. S. E.	Salmon	
Orkin, P. A., B. Sc.	Elasmobranchs	
Dodd, J. M., B. Sc.	Shore Fauna	Zool. Dept., St. Andrew's University.
Holland.		
Havinga, B., Dr., Director	Co-ordination of Fishery Investigations	Rijksinstituut voor Visserij-onderzoek, — Oost-Indisch Huis, Amsterdam.
Korringa, P., Dr.	Shellfish	— Bergen op Zoom.
Deelder, C. L.	Yssel-Lake Fisheries	— Oost-Indisch Huis, Amsterdam.
Boerema, L. K.	North Sea Fisheries	— Wassenaarscheweg, 20, 's-Gravenhage.
Roskam, R. T.	Chemistry of Water. Bacteriology of Shellfish	— Den Helder.
Olie, J., Dr., Director	Preserving of Fish Nets	Visserij-Proefstation, Maliebaan 103, Utrecht.
Grijns, A., Dr., Director	Bacteriology. Oyster and Mussel Cleansing	Lab. Bestuur der Visserijen op de Zeeuwse Stromen, Bergen op Zoom.
van den Broek, J. C. H., Dr.	Technological Research of Fisheries Products	Centraal Instituut voor Voedingsonderzoek, Catherijnesingel 59, Utrecht.
Termijtelen, J. W., Vice-Admiral, Director	Hydrography	Kon. Ned. Met. Instituut, Oceanografische Afdeling, De Bilt.
Groen, P., Dr.	Hydrography	
Iceland.		
Friðriksson, Á., Mag.scient., Director	Ichthyology	Atvinnudeild Háskólans, Borgartun 7, Reykjavik.
Einarsson, H., Dr.	Herring, Echinoderms, Zooplankton.	
Jónsson, J., Mag., scient.	Cod	
Stefánsson, U., Mag. scient.	Hydrography. Chemistry of Sea Water.	
Jónsson, E.	Herring, Age-determination	
Óskarsson, I.	Cod. Age-determ. Marine Molluscs	
Guðjónsson, Thor, Mag. scient.	Salmon	Hummeltoftevej 96 A, Lyngby, Denmark.
Ireland.		
Went, A. E. J., D. Sc., Ph. D., Inspector of Fisheries and Scientific Advisor	Salmon and Trout. History of Fishing Methods	Department of Agriculture, Fisheries Branch, 3, Kildare Place, Dublin.
Toner, E. D., M. Sc., Assistant Inspector	Herring and Oyster	
Gibson, F. A., M. Sc., Ph. D., Technical Assistant	Sprat, Salmon and Escallops	

Name and Title	Special Subjects	Address
Ireland. (continued).		
Healy, Anne, Miss, M. Sc., Biologist	Brown Trout. Other Freshwater Fish	Department of Agriculture, Fisheries Branch, 3, Kildare Place, Dublin.
Twomey, Eileen, Miss, M.Sc., Biologist	Brown Trout	
Humphries, Carmel, Ph. D	Trout	University College, Dublin.
Poole, H. H., Sc. D., Registrar	Submarine Illumination	Royal Dublin Society, Ballsbridge, Dublin.
Norway.		
Rollefsen, G., Director	Cod, Arctic-Norw. Stock. Hatching and breeding of saltwater fish.	Fiskeridirektoratets Havforsknings-institutt, Postboks 226, Bergen.
Aasen, O.	Herring. Marking experiments	
Breen, O.	Physical Oceanography	
Dannevig, G.	Sprat. Marking experiments on Cod	
Devold, F.	Herring and Flatfish. Arctic questions	
Eggvin, J., Dr.	Physical Oceanography	
Gundersen, K.	Zooplankton	
Rasmussen, B.	Prawn. Redfish. Seal. Arctic questions.	
Rasmussen, Th.	Herring. Age determination	
Revheim, A.	Mackerel	
Slaatsveen, R.	Chemistry of sea water	
Sætersdal, G.	Haddock	
Wiborg, K. F.	Zooplankton. Mussels	
Beyer, F.	Zooplankton	Biologisk Laboratorium, Universitetet, Fredriksgate 3, Oslo.
Føyn, E., Dr.	Chemistry of sea water	
Lea, E.	Herring research. Fish tags	
Sømme, Olaug M., Mrs.	Marine Bacteriology	
Ruud, Johan T., Dr., Director	Whaling research. Zooplankton	Statens Institutt for Hvalforskning, Fredriksgate 3, Oslo.
Jonsgaard, Aa.	Biology of Whales	
Pedersen, T.	Chemistry of Whale oils	
Sæther, C.	Biology of Whales	
Braarud, T., Prof., Dr.	Phytoplankton ecology and taxonomy	Universitetet, Blindern, Oslo.
Gaarder, Karen R., Mrs.	Phytoplankton ecology and taxonomy	
Sverdrup, H. U., Director, Ph. D., Ll. D.	Physical Oceanography	Norsk Polarinst. Observatoriegate 1, Oslo.
Dannevig, Alf., Dr.	Hatching and rearing of fish and Lobster	Statens Utklekningsanstalt, Flødevigen, pr. Arendal.
Kolderup, C. F.	Pelagic fish eggs and fry	
Løversen, R.	Investigations of the 0-group, esp. Cod. Marking of Cod and Lobster	
Mosby, H., Prof., Dr.	Physical Oceanography	Geofysisk Institutt, Allegaten 70, Bergen.
Sælen, Odd H.	Physical Oceanography	
Løkensgard, T.	Growth analysis. Biology of Pike	Landbruksdepartementet, Oslo.
Sømme, S., Inspector of Freshwater Fisheries	Biology of Salmon	
Jensen, K. W.	Cultivation of forest lakes. Feeding of Trout fry	Statens Forsøksvirksomhet for Ferskvannsfisk, Zool. Mus., Tøyen, pr. Oslo.
Rosseland, L.	Food of Trout, esp. *asellus aquaticus*	
Sivertsen, E., Dr.	Biology of Eel. Seal	Vidensk. Museum, Trondheim.
Berg, M.	Food organisms of fish, esp. in lakes	Tromsø Museum, Tromsø.
Fjeldstad, J. E., Dr.	Physical Oceanography	Geografisk Institutt, Blindern, Oslo.
Portugal.		
Cumano, H. B.	Echinodermes	Faculdade de Ciências, (Zoologia) Lisboa.
Frade, F.	Poissons (Thonidés)	
Ricardo Jorge, Prof. A.	Zoologie (Vermes)	
Sacarrão, G. F.	Embryologie (Cephalopodes)	
Candeias, A.	Plancton (Copépodes)	Instituto de Biologia Maritima, Cais do Sodré, Lisboa.
Ramalho, A. M.	Poissons (Clupéidés)	
Vilela, H. Z.	Crustacés et Mollusques	
Machado, A. F.	Poissons d'eau douce	Estação Aquícola do Ave, Vila do Conde.
Soeiro, J. S.	Poissons d'eau douce	
Marques, Me. Emerita	Plancton (Copépodes)	Rua da Junqueira, 14, Lisboa.
Silva, Me. Estela	Phytoplancton	Vivenda Actínia, Parede.
Pinto, J. S.	Plancton	Vivenda Actínia, Parede.

Name and Title	Special Subjects	Address
Spain.		
García-Rodríguez, R., Contre-Amiral, Directeur Général	Océanographie	Instituto Español de Oceanografia, Alcala 27, Madrid.
Navarro, F., Sous-Directeur, Chef de Dept. de Biologie	Clupéidés	
Lozano, L., Prof. Agrégé	Ichthyologie	
Lozano, F.	Ichthyologie	
Navarro, M. G. de, Mme.	Ichthyométrie	
Rodríguez, O.	Biologie	
Alvariño, Angeles, Mme.	Biologie	
Cabañas, F.	Océanographie	
Montequi, R., Prof., Chef de Dept. de Chimie Appl.	Chimie	
Villegas, J.	Chimie	
García, Dolores, Mlle	Chimie	
Montequi, Dominica, Mlle	Chimie	
Jimeno, E., Prof., Chef de Dept. de Chimie-physique	Chimie	
Aravio-Torre, J.	Chimie	
Martín, María, Mlle	Océanographie physique	
Blanco, J.	Océanographie physique	
Menéndez, N., Prof., Chef de Dept. d'Océanographie physique	Océanographie physique	
Palacios, J., Prof. Agrégé	Océanographie physique	
González-Sabariegos, M. L., Mlle	Océanographie physique	
Seco, E.	Océanographie physique	
Sáez, A.	Océanographie physique	
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Fernández-Riego, A.	Chimie	
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G. de Llarena, J., Professeur	Géologie. Sédiments	
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Molander, A. R., Dr., Director	Sprat, Plaice, Haddock, Ling.	Havsfiskelaboratoriet, Lysekil.
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(One member, only, from each country is entitled to vote.)

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	Dr. H. Barnes,
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European Atlantic Slope.

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Holland:	Dr. B. Havinga,
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Poland:	Dr. M. Bogucki,
Scotland:	Dr. H. Wood,
Sweden:	Dr. A. R. Molander.

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France: Mr. M. Terrin,
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Hydrographical Consultant:
Dr. John B. Tait,
Plankton Consultant:
Dr. P. Jespersen,
failing him Dr. C. E. Lucas.

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England: Mr. F. T. K. Pentelow,
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failing him Dr. J. Hult.

Whaling Committee.

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Dr. C. E. Lucas,
Dr. Å. V. Tåning,
Dr. J. T. Ruud,
Dr. J. Borowik,
Mr. G. J. Lienesch,
Mr. Árni Friðriksson.

Finance Committee.

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Mr. G. Rollefsen,
Dr. E. Leloup.

Special Sub-Committees.

Sub-Committee on the Faroe Question.

Dr. Å. VEDEL TÅNING, Chairman,
Mr. M. GRAHAM,
Prof. J. LE GALL,
Dr. B. HAVINGA,
Mr. BIRGER RASMUSSEN,
Dr. C. E. LUCAS,
Mr. Á. FRIÐRIKSSON.

Sub-Committee for the Standardization of Zooplankton Methods.

Mr. F. S. RUSSELL, Chairman,
Dr. P. JESPERSEN,
Mr. R. S. WIMPENNY,
Dr. J. H. FRASER,
Dr. H. HÖGLUND,
Mr. K. F. WIBORG.

Sub-Committee for Organization of Combined Hydrographical-Biological Investigations.

***Dr. J. EGGVIN, Chairman,**

Dr. T. BRAARUD,
Mr. G. DANNEVIG,
*Mr. L. FAURE,
Prof. J. LE GALL,
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*Dr. H. HÖGLUND,
*Mr. J. R. LUMBY,
Dr. A. P. ORR,
*Dr. E. LELOUP,
Mr. F. S. RUSSELL,
*Dr. J. B. TAIT,
Dr. Å. V. TÅNING,
*Mr. H. THOMSEN,
*Mr. J. SMED, Secretary.

* Members of the Executive Committee.

ENGLISH VERSION

Report and Recommendations of the Consultative Committee.

Chairman: Mr. Michael Graham.

I. Proceedings.

The President referred to the sad death of Dr. Clark and asked the members to elect a new Chairman for the whole year and not for the session only.

Mr. Graham was unanimously elected.

1) In the absence of Dr. Hodgson Mr. Friðriksson was invited and agreed to take the Chair at the Herring Committee.

2) Fishery Hydrography.

At the first meeting, the President read a short paper on this subject (see Appendix B).

The relation between the problems of fishery hydrography and the programme of the Sub-Committee on hydrographical-biological investigations was shortly discussed. Mr. Helge Thomsen called attention to the fact that the Sub-Committee had been started for a limited task, especially a practical one. After some pertinent remarks by Dr. Lucas, Mr. Wimpenny, and Dr. Poulsen, it was clearly understood that the fishery hydrography problems could not be fully discussed nor properly dealt with at the present session, but that at least two years would have to be given to their consideration. At the present meeting the members were asked to lay the suggestions before their Committees and hear what their members had to say.

At the second meeting a long discussion took place on fisheries hydrography, from which the following main points emerged

i) detailed hydrography could be best done by individual hydrographers, but usually with the help of data from the Service Hydrographique.

ii) there was still need to chose some limited series of observations which, if regularly maintained, would give information sufficiently important to be worth the international effort required.

iii) there was a demand for hydrographical study and advice on particular problems which extended outside any one area studied by one nation or committee; and to meet such demands would require great expansion of the Service Hydrographique.

iv) up-to-date news was required of year-to-year changes, such as would be provided, for waters adjacent to the British Isles, by the charts offered by England, the provision of which might become a central service eventually, and the use of similar charts might be adopted in other areas. Recommendation 6 a was agreed.

v) there was much room for improvement in definition of the biological problems requiring hydrographical study also.

vi) it would be of value to have a special meeting to review actual examples of the relation of hydrography and fisheries, provided, (a) that the term "hydrography" was interpreted in the widest sense, (b) that the papers aimed to evaluate the effects, particularly upon commercial fishes, (c) that the papers were circulated well in advance of the meeting. Dr. Lucas was named as convener and Dr. Poulsen as reporter of such a meeting, and Recommendation 3 a was agreed.

vii) the fundamental connexion between hydrography and fisheries must be the effects of conditions on the fish and the demands of the fish on the environments, as expressed by the North-Eastern Area Committee. Reference was made to the work of Dr. H. O. Bull of the Laboratory at Cullercoats, whose participation in the special meeting would be welcomed. Recommendation 3 b followed.

The Chairman adjourned the discussion for 12 months.

3) Consideration of papers and proofs laid before the Committee. The Progress Report and the *Annales Biologiques* were accepted. The General Secretary asked for suggestions bearing on a possible reduction of the Administrative Report. After a short discussion it was agreed that the publication of the Reports should be continued, the scientific data to be given in the Annales, purely administrative matter in the Administrative Reports.

4) Long-Term Programmes. At the first meeting, the President explained that the question had been raised in the Bureau as the result of the programmes prepared by Mr. Wimpenny for the

northern areas. M. LE GALL said that similar programmes had also been intended for the Atlantic Committee. In the second meeting, after considering the magnitude of the task of making a handbook out of a long-term programme, it was agreed to be content with a document for the Council's own use, and Recommendation 5 a was made.

5) Shellfish and Inshore Fishing Committee. During the first meeting the General Secretary advocated the establishment of a Committee and asked the members to decide about it.

The Chairman quite agreed that Herring and Shellfish had the right to an international platform. He wanted, however, to raise a new proposition: the Reorganisation of Committees. A big increase had followed when the Area Committees were started. Some sort of reorganisation might be considered, an amalgamation with about the same number of Chairmen and Vice-Chairmen, perhaps some eight Committees to cover the whole subject matter, but giving more flexibility. Some functions were overlapping.

A Sub-Committee consisting of Mr. GRAHAM (Chairman), Mr. ROLLEFSEN, Dr. BLEGVAD, Dr. TÅNING, M. LE GALL, Mr. LIENESCH, and Mr. THOMSEN was asked to work out definite proposals; later, Prof. SVERDRUP was co-opted.

The report of this Sub-Committee on Reorganisation (see Appendix A) was submitted at the second meeting, amendments in the draft being made in Committee. The Chairman explained how he thought the new organisation would work in practice, the Chairmen of Sub-Committees sorting the contributions and questions they receive according to the width of interest in order that each might appear in its appropriate meeting—General Committee or Sub-Committee. Other questions were answered and members who had been critical of the scheme agreed to reserve such of their criticisms as had not already been met until the scheme had been tried, when the Chairman undertook to encourage consideration of revisions.

The report of the Sub-Committee was adopted: Recommendation 2.

The Chairman asked if any member wished to comment further on reorganisation, but members agreed to proceed to the next item.

6) The reports of all Committees, which had been distributed, were discussed and passed at the second meeting. See Recommendation 1.

In considering the Atlantic Report, the Chairman called attention to the valuable co-operation of the U.S.A. in offering to test blood groups of tunny and sardines in order to investigate races.

The use of ASDIC and echo-sounding for detecting shoals of fish was discussed on the recommendation of the North-Eastern Area Committee. See Recommendation 5 b.

Dr. POULSEN spoke to the reminder from the Transition Area Committee about the protection of three crustacean species. The President intervened to say that the resolution of the Council still stood; and Dr. POULSEN, at the Chairman's suggestion, agreed to prepare an up-to-date statement of the scientific view that protection is necessary.

Continuation of the Plankton Sheets was agreed; and the Chairman and members of the Plankton Committee reported that Prof. BRAARUD had given an interesting and promising statement of progress in working up the international catches of Plankton. See Recommendation 7.

The recommendation of the Salmon and Trout Committee that salmon marking should be encouraged to continue in Northern Ireland was adopted: Recommendation 6 b.

Mr. SOMME spoke to the recommendations of two Area Committees and of the Salmon and Trout Committee expressing concern lest there be a salmon fishery in international waters. Although some members doubted whether a case had been made out, it was agreed that the question should be investigated by a Sub-Committee and Recommendation 4 was agreed. Messrs. SOMME, POULSEN and WIMPENNY were nominated, and asked to elect their own Chairman.

On a recommendation from the Shellfish Meeting, the culture of marine organisms was thought to be either too limited in scope for a special meeting, or, if extended in scope, to be too limited in interest.

Mr. ROLLEFSEN called attention to the necessity of standardizing indices of fish stocks, pointing out that the factors—growth, mortality, and reproduction—were the same in all; yet different indices for their appraisal were in use. The Chairman suggested that members might encourage contributions on the subject, which would be suitable for general meetings.

The meeting closed.

II. Recommendations.

1. General Reports of Commitees.

The following proposals were approved by the Committee in addition to those set out separately hereafter in the reports of the various Committees.

(a) Atlantic Committee: the standardised form of the *Annales Biologiques;*

(b) Southern North Sea: data to be collected, and charts to be prepared, by the Hydrographical Committee;

(c) Transition Area: protection of *Pandalus borealis* etc.;

(d) Hydrographical Committee: acceptance of German offer regarding current measurements;

(e) Plankton Committee: work to be done on the distribution of nutrient salts;

(f) Whaling Committee: about future possible meetings of the Committee.

2. Organisation of the Council.

That the Sub-Committee's report on Reorganisation be adopted, and that any suggestions for amendment should reach the Chairman by 1. February 1951.

3. Special Scientific Meeting.

(a) That in 1951 a Special Meeting should review the effects of hydrographical conditions on fish and fisheries (Convener, Dr. Lucas; Reporter, Dr. Poulsen).

(b) That Dr. H. O. Bull be invited to attend the Council Meeting in 1951 at the Council's expense in order to contribute to the Special Meeting.

4. Protection of Fish.

That there should be a Sub-Committee to consider whether protection of salmon in the sea in offshore waters is required (Messrs. Somme, Poulsen, Wimpenny).

5. Material for Future Work.

(a) That long-term programmes be collated by the Chairman for the Council's use.

(b) That the Chairman of the Herring Committee should collect requirements for echo-sounders and ASDIC for location of fish shoals into a document to be made available to manufacturers, who would then be supplied with copies of the requirements and invited to supply further information[1]).

6. International Cooperation.

(a) That the necessary data should be forwarded to England in order to produce monthly hydrographical charts of conditions at the surface of seas adjoining the British Isles.

(b) That the Government of Northern Ireland be encouraged to continue their participation in the programme of salmon marking, as recommended by the Salmon and Trout Committee.

7. Assistance to Scientific Workers.

That assistance to Prof. Braarud should be completed during the next financial year.

[1]) Modification of the last sentence, accepted in Bureau by the Chairman, whose original recommendation included a proposal for a demonstration.

APPENDIX A

Report of Sub-Comittee on Reorganisation of Committees.

Members: Messrs. Graham (Chairman), Lienesch, Blegvad, Tåning, Thomsen, le Gall, Rollefsen, Sverdrup (co-opted).

1. The Sub-Committee met 3 times, to consider how Committees could be reorganised in order to:

(i) make a place for shellfish matters,

(ii) reduce the separation of participants at Council Sessions caused by many committees,

(iii) bring matters of general interest before somewhat larger meetings than at present.

2. The Sub-Committee found that the present organisation was effective for co-ordination of the work; but that the meetings are disappointing in respect of discussion and interchange of knowledge.

3. Typical Agenda of an existing committee are as follows:

(i) Representation.

(ii) Administrative Report and *Annales Biologiques*.

(iii) Programmes.

(iv) Contributions, and discussion on them.

(v) General questions—e.g., fishery hydrography; long-term programme.

(vi) Other business.

(vii) Election of Chairman.

Items (i) to (iii) and (vi) to (vii) occupy a total of little more than half an hour. Item (iv) occupies on the average about one hour and item (v) about one hour. In a larger meeting item (v) would occupy longer, perhaps an hour and a half.

4. It would be better if contributors could command a wider audience than that of one of the present committees; but it has to be recognized that the contributions take up the greater part of the time, and would not take less if committees were amalgamated. On the other hand, the general discussions would take less time if the committees were amalgamated, because repetition in several committees would be eliminated.

5. The Sub-Committee was not inclined to avoid the problem by making the meeting longer. The longer the meeting, the harder it is to spare active people to attend it.

6. The problem being one of the best use of time, the Sub-Committee recommends the following measures, all of which save time, without serious other loss:

(i) More strict adherence to the rule about reading contributions.

(ii) Reference of difficult questions of limited interest to *ad hoc* sub-committees.

(iii) Invitations by Chairmen to members of other committees to express the view of the other committee on problems of interest to both committees.

(iv) Use of Sunday.

7. Taking account of the foregoing considerations, the Sub-Committee recommends the following reorganisation.

8. That area committees should, in general, follow the model of the Atlantic Committee, that is, a regional committee and area sub-committees. The committees would attend to general questions and would receive contributions of wider interests, the sub-committee would attend to the matters of administration, items i, ii, iii, vi, vii of Para 3 above, and could receive contributions of narrower interest. The chairmen of committees would be encouraged to collaborate with each other in co-ordination of the work of the Council.

9. In addition to the reorganisation proposed here, the Sub-Committee noted the requirement for a meeting of general fisheries interest, without restriction of subject: material for which, in synoptic form, would be submitted to the Central Office by August 1st.

10. Details of Committees and Sub-Committees (now existing and proposed) are given in the Addendum.

11. Such a reorganisation would allow the following model time-table, in which it will be seen that there is opportunity for all members to attend at least part of every committee meeting.

12. The above recommendations are subject to nominal corrections to reduce as far as possible amendments to the rules of the Council.

	Morning	Afternoon
Monday	Council Delegates.	Consultative
Tuesday	General	General
Wednesday	Pelagic Animals	adjourned meeting if necessary
Thursday	Northern Seas	adjourned meeting if necessary Atlantic
Friday	Littoral and Marginal Seas	adjourned meeting if necessary Statistical
Saturday	Hydrography	Plankton
Sunday	Special Meeting	adjourned meeting if necessary
Monday	Consultative	
Tuesday	Council	

Notes: (1) Chairmen would be encouraged to put time-tables of their meetings on the notice board for the information of members who might not wish to attend a whole sitting.

(2) Sub-Committees would be fitted in during the course of the Session perhaps even on the first day.

ADDENDUM

(Details of Committees etc.)

Existing Committees	Sub-Committees (or Committees)	Committees (or Groups)
1. North-Eastern	North-Eastern	1. Northern Seas
2. North-Western	North-Western	
3. Northern North Sea	North Sea	
4. Southern North Sea		
5. Transition	Transition	2. Marginal Seas
6. Baltic	Baltic	
7. Salmon and Trout	Anadromous and Katadromous Fish	
8. (proposed Shellfish)	Shellfish	
9. Atlantic (3 sub-committees)	European	3. Atlantic
	African	
	Mediterranean	
10. Herring	Pelagic Fishes	4. Pelagic
11. Whaling	Pelagic Mammals	
12. Statistical	—	5. Statistical
13. Plankton	—	6. Plankton
14. Hydrographical	—	7. Hydrographical

It is proposed that normally chairmen of sub-committees would serve as chairmen of committees, perhaps in rotation.

APPENDIX B

Co-operation between Biologists and Hydrographers

By

K. A. Andersson

In a letter to me, the Chairman of the Consultative Committee, Dr. Clark, has told me that he intends to take up the question of the closer relationship between biologists and hydrographers for discussion at the next meeting of his Committee.

As I raised this question at the Bureau Meeting in May 1950, I feel I should say a few words.

In spite of the extensive international biological and hydrographical investigations already made, and of the very important results obtained, many important problems concerning the influence of the environment on the animal life in the sea are still awaiting solution. Let me take some examples from the herring, which I have studied to some extent. We do not know whether, and if so to what degree, the hydrographical conditions are responsible for the occurrence of different herring populations with, for instance, varying numbers of vertebrae. We do not know to what extent the environment is the cause of the varying abundance of year-classes, and we do not know whether it is changes in the sea currents or in the general hydrographical conditions that have occasioned the great fluctuations in the herring fishery off the west coast of Sweden. These are but a few examples from the herring. I believe that similar instances can be cited in the case of other fish.

Immediately after the Council Meeting in October 1945, there was a meeting in Charlottenlund with herring experts particularly interested in the herring fisheries of the Transition Area.

At this meeting the herring problems of the said area were thoroughly discussed, special stress being laid upon the desirability of examining the part played by the hydrographical conditions in causing the great fluctuations in the herring fisheries in the Skagerak and the Kattegat.

The eleven recommendations made at this meeting included one to the following effect.

"Hydrographical investigations should be undertaken on the spawning grounds of the herring at the time of the spawning season. If possible, such investigations should be carried out in the form of continuous observations during the spawning period."

This recommendation was accepted with a view to ascertaining the influence which the hydrographical conditions—especially temperature and salinity—exert upon the abundance of year-classes. Moreover, such hydrographical work on the spawning grounds should also prove whether the different characters of the various so-called herring races could be a result of the different environments.

At the Council Meeting in 1945 a Sub-Committee was also formed to discuss the organization of combined hydrographical-biological investigations.

At its first meeting in August, 1946, this Sub-Committee suggested *inter alia* that the problem of the influence of hydrographical factors upon the biometrical characters used in race work should be studied by means of hydrographical investigations on the spawning grounds of food fishes, especially the herring.

Subsequently, in May and September, a number of sections were made across the North Sea, the Skagerak and the Faroe-Shetland Channel.

At the meeting in Edinburgh last year of the Hydrographical Committee it was agreed—at the suggestion of the Sub-Committee—that the results obtained should be worked up into a comprehensive report before further action was taken.

I am sure that very valuable results—from the biological point of view also—will emerge from this hydrographical work.

But I feel nevertheless that a still closer liaison between hydrography and biology is essential. For I am not convinced that the hydrographical results available can supply answers to all the questions that may be asked by biologists concerning the environment. In order to judge correctly the influence exerted by the physical and chemical conditions in the sea upon the animal life, it is frequently necessary for the hydrographical conditions to be studied in a certain defined area during a fixed period of time when something of particular biological importance is taking place in that area. For instance, if you wish to know the influence that may be exerted by the hydrographical conditions upon the embryonic development of the herring, it is necessary to undertake hydrographical investigations on the spawning grounds at the time when that development is taking place.

It is of course a well-known fact that we have a spring spawning herring off the east coast of Scotland whose vertebral number is about 57, while the Norwegian spring spawning herring which spawns

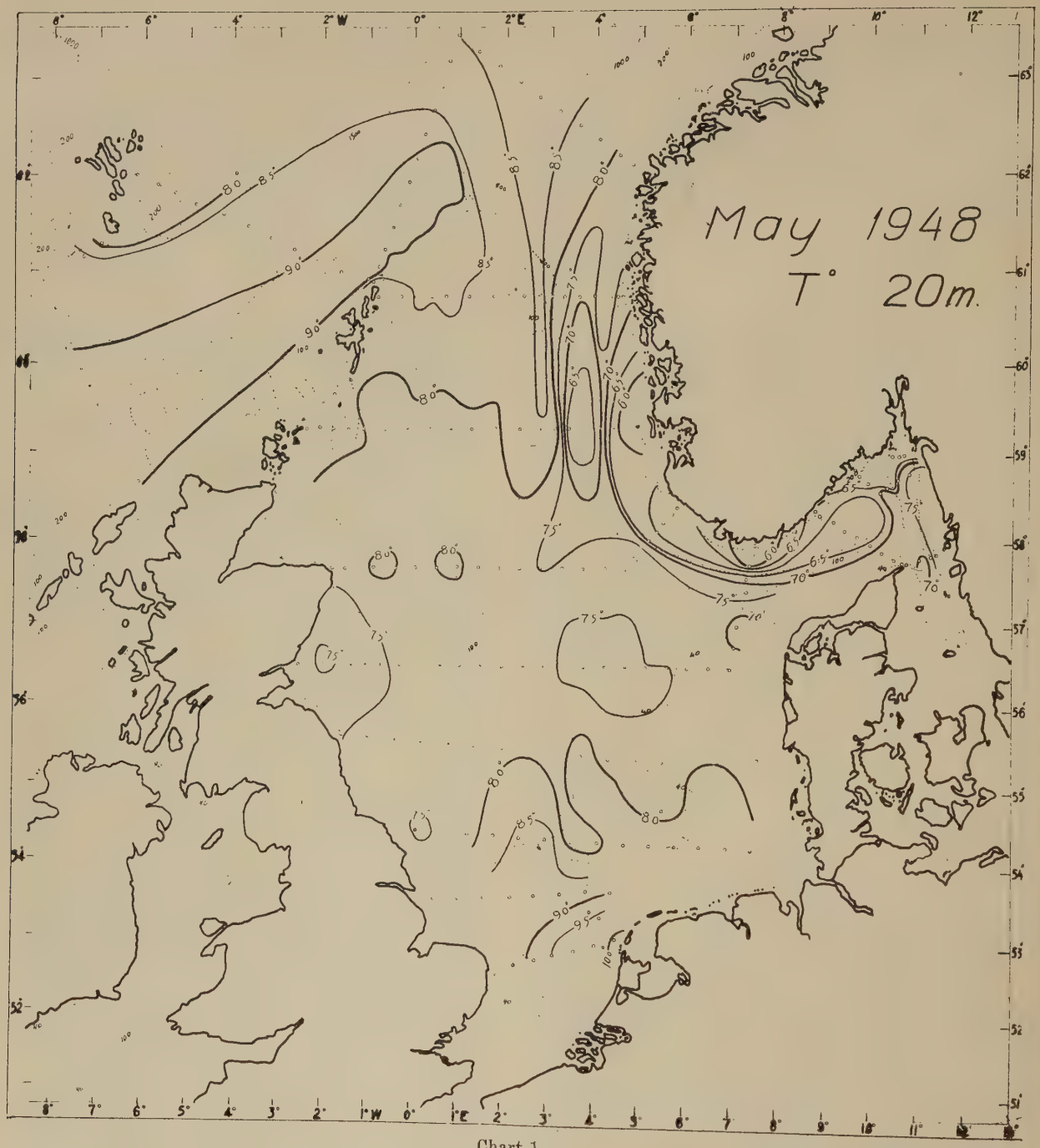

Chart 1.

Prepared by J. EGGVIN.

off the south-west coast of Norway has about 57.40 vertebrae. What is the cause of this difference in the number of vertebrae? Is it varying hydrographical conditions in the two spawning areas?

At my request Dr. EGGVIN has been kind enough to send me extremely interesting information about the temperature of the water at 25 and 50 m. at the west coast of Norway for February and March 1942—1949 (Table 1). This shows that the variations are very great from year to year. He has also sent me two temperature charts for May 1948 at 20 m. and 50 m. in the northernmost North Sea (Charts 1 and 2).

Chart 2.

Prepared by J. EGGVIN

Table 1. Monthly Average Temperatures. 59°15.2′ N. - 4°46.5′ E. (Utsira).

		February.								March.							
Year:	1942	43	44	45	46	47	48	49	Year:	1942	43	44	45	46	47	48	49
25 m.	—	6.0	6.3	4.6	5.4	4.5	4.6	6.7	25 m.	1.3	5.4	5.4	5.1	4.6	3.6	4.4	5.6
50 m.	—	6.1	6.4	5.1	6.6	4.8	5.3	6.8	50 m.	2.1	5.5	6.0	5.4	4.8	4.2	5.3	5.7

These show that the temperature was higher off the Shetland Islands and the north of Scotland than on the coast of Norway opposite. But of course it tells us practically nothing about conditions during the spawning period in March and April. A similar temperature chart for March and April would in my opinion be very valuable. That is why I consider that investigations should be made in the spawning area during the period in which the eggs develop.

I have wished to draw attention to these well-known facts merely as an instance of the desirability, in my opinion, of closer co-operation between biologists and hydrographers.

The Chairman of the Consultative Committee has put this question on the agenda and I have heard from Dr. Clark that some of the Area Chairmen have already considered this problem.

It is my wish that this question should come up for discussion in the different committees and that they should be able to put forward definite problems which they wish to have solved by means of hydrographical investigations. The more these problems can each be defined and fixed the better. For instance, if you want to have the hydrographical conditions in a spawning area investigated, then it is essential for the biologists to give the exact position of this area and the time during which it is desired to carry out the hydrographical investigations.

Now I am sure that I have been too long, but I have come to the conclusion that this question is of paramount importance and extremely likely to promote the interests and activity of the Council.

Now I only hope that the hydrographers will not think that we biologists are asking too much of them.

Reports and Programmes of Area Committees.

North-Eastern Area Committee.

Chairman: Mr. G. Rollefsen.

I. Proceedings.

1) The following contributions and reports were given:

(a) Gunnar Rollefsen: Age distribution of the arctic cod.

(b) Gunnar Rollefsen: The frequency of spawning zones in otoliths of tagged and recaptured cod.

(c) F. Devold: Report from the cruise of R/V "G. O. Sars" in the Norwegian Sea in summer 1950.

(d) O. Aasen: The duration of the different maturity stages in the herring.

2) A discussion on fishery hydrography revealed that:—

(a) It was desirable to undertake experimental work on the requirements and reactions of marine organisms in relation to chemical and physical factors.

(b) The biologists should define their demands for hydrographical information more precisely,

(c) The hydrographers and biologists should aim to present their results in a way best suiting each other.

3) Research ships programmes in the coming year were given from England, France, and Norway.

4) Mr. G. Rollefsen re-elected Chairman.

II. Recommendations.

1) The Committee endorses the recommendation of the Southern North Sea Committee that there should be a special meeting on the effect of hydrographical conditions upon biological phenomena connected with fisheries.

It was also considered that monthly charts of surface temperatures and salinity would be valuable to biologists.

2) The Committee considers that ASDIC apparatus is important for finding and surveying schools of herring and other fish, and further considers that participating Governments would be well advised so to equip their research vessels with this apparatus[1]).

3) The Committee is of the opinion that a handbook should be prepared giving the general lines of future work to be carried out by the I.C.E.S.[2]).

4) The Committee requests the Consultative Committee to consider the question of affording protection for the Atlantic salmon against commercial fishing in international waters outside the Baltic[3]).

[1]) Endorsed by the Consultative Committee as Rec. 5b.
[2]) Endorsed by the Consultative Committee as Rec. 5a.
[3]) Endorsed by the Consultative Committee as Rec. 4.

North-Western Area Committee.

Chairman: Dr. Å. Vedel Tåning.
Vice-Chairman: Mr. Árni Friðriksson.

I. Proceedings.

1) Communications.

(a) Dr. Paul M. Hansen gave an account of his investigations in West Greenland waters during the last season. He demonstrated a series of slides which showed the distribution of fry of cod, halibut, Greenland halibut, and Sebastes as found by the "Dana" in the Davis Strait during July 1950. An outstanding feature of the investigation was the greater number of cod larvae than were found 25 years ago in the area, and the much quicker growth of the larvae during the pelagic stage. He gave an analysis of the age composition of the stock and suggested that there was evidence for believing that the West Greenland stock was becoming increasingly independent. He also reported on the prawn investigations in Greenland waters.

(b) Mr. B. Rasmussen reported on his investigations of the bank fishery off West Greenland and stressed the relation between the density of cod on the banks and the hydrographical conditions. Fishing conditions had been much better during the summer of 1950 than in the previous year, owing to the rise in temperature along the edge of the banks.

(c) Dr. J. H. Fraser summarized a paper by Mr. A. Saville in which he dealt with the quantity of haddock eggs in the Faroe area, the subsequent number of larvae and the rate of mortality of the larvae at different stages. It was concluded that the year-brood would be below the normal.

(d) Mr. J. Jónsson gave a review on the stock of Icelandic cod. He gave an analysis of the age composition during recent years and the average age at first maturity. By means of the spawning zones of the otoliths he indicated how to assess recruitment and finally demonstrated how it seems possible to forecast the yield of the fishery.

(e) Finally Mr. Árni Friðriksson summarized the results obtained by him and Dr. G. Timmermann regarding the spawning places of the herring off the south coast of Iceland during the spring of 1950. Some 50 spawning localities had been found by means of spawning herring, herring eggs on the sea bottom, and "spawny" haddock. The spawning took place from the Westman Isles to Reykjanes from the middle of March to the end of April on gravel bottom between 50 and 100 m. depth, in water of 6—7° C.

2) The Chairman and the Vice-Chairman re-elected.

II. Programme of Work.

No alterations were proposed to the general programme adopted last year.

In accordance with what has been the practice during recent years it was decided that the different countries' detailed programmes of work and the co-operation between the members should be settled during the winter by correspondence.

III. Recommendations.

1. The Committee endorses the recommendation passed by the Committees of the Southern North Sea and the North-Eastern Area that there should be a special meeting on the effect of hydrographical conditions on biological phenomena experienced with fisheries.

2. That a handbook should be prepared, indicating the present views of standard work to be carried out by the International Council in future[1]).

3. That the Consultative Committee should consider measures for protection of salmon in the Atlantic as proposed by the North-Eastern Area Committee[2]).

The Sub-Committee on the Faroe Question.

The Chairman, Dr. Å. Vedel Tåning, reported on progress since the last meeting. The collection of material etc. will now be dealt with by a small fishery research laboratory in Thorshavn established by the Danish and the local Governments.

The Chairman requested the members to provide for measurements of cod from the area to be made on the different markets and by research vessels. A closer co-operation between Scotland and Denmark regarding the distribution of cod eggs and larvae would be arranged for by correspondence. Norway and England would try also to provide material from the area. This work should also be arranged for by correspondence.

[1]) Endorsed by the Consultative Committee as Rec. 5a.
[2]) Endorsed by the Consultative Committee as Rec. 4.

Atlantic Committee.

Chairman: Prof. J. LE GALL.

I. Proceedings.

1) Progress of Work.

A. Sardine. A short survey was given of the results of the work, reported upon in the Sub-Committees, concerning the biology of the sardine and related species.

Dr. RAMALHO gave an account of his recent visit to California and of the investigations being made along the Pacific coast on the biology of the sardine and the associated fishery.

B. Tunny. A short summary was given of the results of the researches made in the three Sub-Committees into the biology of tunnies and their associated fisheries.

M. LE GALL remarked upon the results of the latest observations made on the long-finned tunny (*Germo alalonga*)—biometrics, age, recruiting year-classes.

M. H. HELDT read a paper on biological studies into the long-finned tunny, based on scale readings.

Dr. LIONEL WALFORD (Fish and Wildlife Service, U.S.A.) reported on the measures put into use in the U.S.A. for studying the biology and the behaviour of the tunnies. He emphazised the international and world-wide importance of these studies and stressed the necessity of a close collaboration between the scientists. Finally, he called attention to the recent work carried out, at the Museum of Serology of Rutgers University, New Jersey, on the possibility of using the blood serum of animals for recognizing the different geographical populations within one species. This method may be applied to the study of the stock of various species of tunnies.

Smears of blood and serum might be sent to Dr. LIONEL WALFORD for the continuation of these investigations in collaboration with the European laboratories.

C. Hake. From the papers presented at the African Slope Sub-Committee it emerged that investigations will be made into the different populations of the species of the genus Merluccius of the eastern Atlantic.

2) Professor J. LE GALL re-elected Chairman.

II. Programme of Work.

The Committee co-ordinates the programmes of work presented by the three Sub-Committees for the year 1950/51. It was decided that the work on the biology of the clupeids and the tunnies should be continued according to the existing programmes and that the following items should be put on the agenda for the work of the Atlantic Committee for the ensuing year: a general survey of the hake; systematics, biology, fishery.

Charts (monthly) showing the occurrence of the sardine and the hake will be prepared. M. J. FURNESTIN will compile the documents for the preparation of the sardine charts, and M. LETACONNOUX those of the hake.

III. Recommendations.

1) That the other Committees which contribute to the preparation of the *Annales Biologiques* should keep to the same rules as those observed by the Atlantic Committee in the working up and presentation of texts to this series.

2) The Atlantic Committee and the three Sub-Committees recognize that in the vast area covered by them the hydrographical observations are as yet insufficiently numerous to enable definite conclusions to be drawn, and that a substantial amount of further data are required to achieve this end. The above committees therefore express the wish that the Hydrographical Committee's recommendation (2) be endorsed by the International Council, so that, in the general interest, the collaboration between biologists and hydrographers of the Council might be facilitated and the most effective use made of the results of the investigations carried out by both sets of workers[1]).

[1]) Accepted by the Consultative Committee under the form of Rec. 3a.

European Atlantic Slope Sub-Committee.

Chairman: Dr. F. Navarro.

I. Proceedings.

1) Communications.

P. Desbrosses: Observations on the sole, *Solea solea* (L.), of the coasts of Brittany.

R. Letaconnoux: The stock of hake in the Bay of Biscay in 1949.

L. Bellón: Summary of a report on the *Neothunnus albacora* (Lowe).

M. Creac'h: On the *Scomberesox saurus* of the Bay of Biscay.

2) Dr. Navarro re-elected Chairman.

African Slope Sub-Committee.

Chairman: Dr. Jean Furnestin.

Proceedings.

1) Communications and papers presented to the Sub-Committee:—

J. Furnestin: Hydrography of the coasts of Morocco (1949).

M.-L. Faure: The zoo-plankton of the Moroccan coastal zone (1949).

J. Furnestin and M.-L. Faure: The reproduction of the sardine and the anchovy in the Moroccan coastal zone during 1949.

C. Maurin: The hake of the Moroccan coasts.

R. Letaconnoux: The hake of the African coast.

J. Cadenat: The hake of the west coast of Africa.

R. Coupe: *Pagellus acarne.*

R. Coupe: The Sparidae of the Moroccan coasts.

F. Navarro: The fishing grounds off the Sahara coast south of Cape Juby.

E. Postel: Trawling on the Senegal coasts.

E. Postel: The tunnies of the Cape Vert peninsula.

J. Cadenat: Some Scombridae of the Cape Vert islands.

E. Postel: The exploitation of sharks at Senegal.

E. Postel: Some temperature and salinity data from the west coast of Africa.

2) Dr. Jean Furnestin re-elected Chairman.

Western Mediterranean Sub-Committee.

Chairman: M. Henri Heldt.

Proceedings.

1) Rapport Administratif. The Chairman remarked upon the work carried out by the various States in the Mediterranean region enlarging upon the report published in the Rapport Administratif for 1949.

2) Communications. The following papers were presented and discussed:—

L. Bellón: Report on *Neothunnus albacora.*

L. Bellón: Notes on the food of *Thunnus thynnus.*

F. Navarro: Some aspects of the penetration of Atlantic plankton into the Mediterranean.

H. Heldt: Some positive results of the cruise of the "Président Théodore Tissier" in Tunis waters (1949).

H. Heldt: Contribution to the study of the biology of the long-finned tunny based on scale-readings.

At the request of the Chairman of the Atlantic Committee, Prof. J. le Gall, this latter paper was presented at the meeting of the Atlantic Committee.

3) M. Heldt re-elected Chairman.

Northern North Sea Committee.

Chairman: Dr. C. E. Lucas.

I. Proceedings.

1) Contributions. Papers by Dr. Carruthers, Mr. Parrish, Dr. Cooper, and Dr. Tait, all on the subject of "Fisheries Hydrography".

Dr. Carruthers' paper made a plea for fisheries hydrographers to review their methods, whilst once again presenting a case for the detailed study of the influence on the sea of winds and for the continued study of currents. He then presented in a summarized form wind data over the Northern North Sea for the years 1900—1949 (prepared by Dr. Dietrich) which could be compared with annual variations in the abundance of fish and other marine organisms.

Mr. Parrish next reported on the relationship between these data and those for the year-broods of haddock in the area over the period 1916—48, in relation to his finding that the strengths of the year-broods appear to be determined during their pelagic phase. The two sets of data showed, with one or two exceptions, a striking correlation. Mr. Parrish then outlined the preliminary theory deduced by Dr. Carruthers' colleagues, Mr. Veley and Mr. Lowford, regarding the mechanism of this correlation, and Dr. Carruthers placed on the table papers showing their latest views on this, in which the Great Northern North Sea Eddy of Dr. Tait is thought to play an important part.

Dr. Cooper's paper was summarized by Mr. Steven. It particularly made a plea for a redeployment of effort by hydrographers working in shallow waters. Dr. Tait, on the other hand, was concerned more to defend the methods of the classical hydrographers in the Northern North Sea and adjacent oceanic waters, whilst endorsing the value of associated meteorological and chemical investigations.

Dr. Tait's second paper demonstrated a method of deriving temperature increments and integrals ("accumulated temperature") which he thought should be of value to biologists in their studies of eggs and larval development, etc.

Other contributions included notes on the Swedish work on the ling and on herring tagging, the Norwegian work on sprat eggs and larvae, and on Scottish investigations during 1950.

2) Dr. C. E. Lucas re-elected Chairman.

II. Programme of Work.

A preliminary draft of the Scottish programme for work during 1951 was circulated and other representatives indicated where possible the work their countries proposed. France, Belgium, Holland, Norway, and Sweden all expect to be operating in the area.

III. Recommendations.

1) The Committee is impressed with the urgency of making hydrographical "standards" and "anomalies" available to fisheries biologists as soon as possible. In particular the committee is of the opinion, in relation to *particular* problems (spawning, larval development, etc.), that summarized wind data such as those submitted by Dr. Carruthers for the Northern North Sea, and accumulated temperature data such as those submitted by Dr. Tait, can be of real value to biologists and others, and urges the Consultative Committee to request that these and similar relevant records (e. g. of sea currents) should be made available and maintained[1]).

2) With such objects in view the Committee advocates that a Special Meeting in October 1951 should be held for the consideration of papers evaluating the effects of hydrographical features upon marine organisms, particularly commercial fishes[2]).

3) The Committee endorses the recommendation made by the Southern North Sea Committee on preparing a "handbook" of the Council's long-term programme, to be based on the programmes already prepared for the Northern Areas[3]).

[1]) Accepted by the Consultative Committee under the form of Rec. 6a.

[2]) Accepted by the Consultative Committee under the form of Rec. 3a.

[3]) Accepted by the Consultative Committee under the form of Rec. 5a.

Southern North Sea Committee.

Chairman: Mr. R. S. WIMPENNY.

I. Proceedings.

Contributions were presented from Dr. HAVINGA on diurnal variations in the catch of common trawl fish and by M. DESBROSSES on the black sea bream in the Channel. In connection with the Comparative Fishing Sub-Committee papers were presented by Mr. PARRISH on the fishing capacities of Lowestoft and Aberdeen trawls when used on flat-fish grounds, on experiments to determine the effect of the use of a small-meshed cover on the fishing power of the otter-trawl and experiments on the shrinkage of trawl cod-end meshes; by Mr. RICHARDSON on a summary of the echo-sounder work carried out by the Laboratory at Lowestoft since 1947 and for Mr. MARGETTS by Mr. TROUT on the shape of a trawl in action.

Mr. WIMPENNY re-elected Chairman.

II. Programme of Work.

It was decided that members should exchange or circulate their final programmes of work as soon as they were ready, and in the meanwhile provisional programmes were produced at the meeting for England and Belgium other members outlining their programmes verbally. It was seen that the work contemplated was similar to that in progress except that in the case of England the census of plaice eggs and larvae in the south-western North Sea would be more concentrated on the larvae and that in case of Holland additional work would be undertaken in order to investigate diurnal and tidal effect on the catches of trawl fish and also of plaice larvae. For Belgium, salinity and temperature and coarse plankton samples will be taken each month at four stations between Deal and Gravelines, and at the West Hinder Light Vessel daily for temperature and salinity samples and twice a week for coarse and fine net samples. In addition Belgium will make an investigation into the shrimp fishery using nets of 18, 20, 22, and 24 mm. and also for demersal fish, chiefly plaice, with meshes of 40, 80, and 90 mm.

III. Recommendations.

1) That the Hydrographic Committee be asked to arrange for:—

(a) The preparation and publication of charts of the conditions of the water in the North Sea and adjacent waters as soon as possible after the data are collected. If sub-surface examples are not available in sufficient numbers, charts of surface conditions will be better than none.

(b) The collection of more routine surface observations on lines across the Southern Bight.

(c) The regular measurements of currents and winds in the Southern North Sea.

(d) The preparation of further series of average values of temperature and salinity, and the regular publication of monthly and yearly anomalies for certain definite regions.

(e) More work on the distribution of nutrient salts.

2) That the Council should hold a Special Meeting in 1951 to review the effects of hydrographic conditions on the fisheries[1]).

3) That the "Long-term Programme for the Northern Areas" should be extended to cover the whole of the Council's area and should be supplemented with references and short descriptions of gear and methods where necessary so that it could be described as handbook or guide to the long-term programme of the Council[2]).

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[1]) Accepted by the Consultative Committee under the form of Rec. 3a.

[2]) Accepted by the Consultative Committee under the form of Rec. 5a.

Transition Area Committee.

Chairman: Dr. Erik M. Poulsen.

I. Proceedings.

1) Communications on work carried out during the year were delivered and the following papers were read:

(a) A. R. Molander (read by N. Rosén): On the growth of the mackerel and on the Swedish investigations upon the sprat; the collecting of statistical material of landings at the port of Göteborg of haddock, lemon sole, and plaice; experiments in aquaria on the influence of certain ecological factors on the number of vertebrae of fish (e. g., plaice).

(b) Alf Dannevig: The experiments at Flødevigen: the rearing of fish larvae and the influence on the larvae of the gas content in sea water.

(c) Aa. J. C. Jensen: The waste fishery, its damage to fish stocks and means of preventing such damage.

(d) Erik M. Poulsen: The Danish plaice transplantations.

(e) Jørgen Knudsen: The biology of the whiting.

2) The question of the relationship between hydrographers and biologists was discussed.

It was agreed that it was desirable to have as early as possible and regularly surveys of the conditions of sea water (salinity, temperature and currents) from suitable sections of the area, and that the observations from light vessels together with those from research vessels could be used to this purpose.

Further it was agreed that

(a) a special study of the currents in the surface and at the bottom along the Norwegian Skagerak coast was needed.

(b) Hydrographical and biological investigations should be carried out simultaneously in smaller, well-defined areas in order to attack special problems.

(c) The question of furnishing certain fishing vessels with means for determination of salinity and temperature in cases where abnormal catches are made should be considered.

(d) The variations in the content of nutrient salts and oxygen as well as pH and redox potentials should be studied more closely.

The Committee agreed to prepare, as a guide to the hydrographers, a detailed statement of the biological problems being of special interest in the nearest future.

3) The question of a special Shellfish and Inshore Fishery Committee was discussed.

4) The proposed long-term programme was considered. Although content with its present programme the Committee agreed to prepare in the course of the coming year a long-term programme that either could be worked together with similar ones for all the other committees or stand as it is, but on account of the great variations in conditions between the Transition Area and the North Sea on the one side and the Baltic on the other, it was not considered possible to prepare a long-term programme in common with one or the other of those committees.

5) Dr. Erik M. Poulsen re-elected Chairman.

II. Programme of Work.

Special stress should be laid on the following matters, which are considered as being of main importance to the fisheries of the area in the nearest future.

1) The maintenance of the stock of plaice.

(a) The quantities of the 0- and I-group as well along the shores as in less shallow water. The results should be collected and prepared as early as possible.

(b) The question of migrations should be studied by means of markings, analyses of quantities and of racial characters.

(c) Material for a consideration of a rise of the minimum size should be collected.

(d) The transplantations and the possibility of artificial propagation should be studied.

2) The question of the importance of the protection of the spawning fishes of the various species should be considered.

3) The herring should be studied mainly by means of tagging experiments, investigations of age and race and possibly by rearing experiments.

4) The cod. The relative importance of the local spawning, the inflow of eggs and larvae, and the immigration of older fish to the maintenance of the stock, should be studied by means of fishing experiments, racial investigations and marking.

5) The causes of the fluctuation in the amount of fish (eggs, larvae, and older fish) should be studied on a broad basis.

6) The influence of the fishery upon the stock of deep-sea prawn, Norway lobster and common lobster should be studied and a survey of the results prepared.

7) The investigations in connexion with the work on artificial propagation of sea fish (and shellfish) should be continued, especially regarding the effect of the output compared to the expenses involved.

8) The studies as to the extent of the damage

caused by the waste fisheries to the stock of food fishes should be continued.

9) The effect of the sewage water on the stock of fishes and on their eggs and food animals should be studied, especially in the Sound and the Oslo Fjord.

III. Recommendation.

The recommendation below from the meeting in October 1948 is still in force:—

"The Transition Area Committee, with reference to the recommendation on the protection of *Pandalus borealis*, *Homarus vulgaris* and *Nephrops norvegicus*, which has been forwarded to the countries interested by the International Council through the Danish Foreign Office, feels that this matter can only be satisfactorily dealt with if the Norwegian Government, for example, should convene a conference of the Governments interested to discuss some form of agreement for the protection of the above-named animals"[1]).

[1]) Accepted by the Consultative Committee on the condition that an up-to-date statement is prepared by Dr. E. M. Poulsen giving scientific evidence for the need of protection.

Baltic Area Committee.

Chairman: Dr. Chr. Hessle.

I. Proceedings.

1) Short reports were given on the investigations in 1950.

2) The following communications were made and discussed:

(a) Dr. Sven Segerstråle: Salinity fluctuations on the coast of Finland and their influence upon the fauna.

(b) Dr. H. Alander: Observations on the stock of the Baltic herring.

(c) Dr. H. Alander: The increase in the stock of some marine fishes in the Baltic during recent years.

(d) Dr. Chr. Hessle: A new plankton disease in the Gulf of Bothnia.

3) The question regarding a closer co-operation between biologists and hydrographers was discussed.

It was agreed that it would be desirable if the biologists let be known to the hydrographers which problems are of special interest to them regarding the biology of the most important fishes. Therefore, a short and instructive survey of these problems ought to be worked out for the guidance of the hydrographers in planning their programmes of work.

On some points, closer hydrographic observations are desirable in the Baltic:

(a) Some more fixed stations working during the whole year for observations of the hydrographical conditions in different water layers and among these stations some also in inshore waters.

(b) Closer observations of the inflow of salt bottom water in the different basins of the Baltic.

(c) More frequent observations of the hydrographic conditions at the spawning places of the most important commercial fishes (herring, sprat, cod, and flat fishes) during the spawning time and the period thereafter (March—June, August—October).

(d) Further investigation of the content of nutrient salts.

4) Dr. Chr. Hessle re-elected Chairman.

Reports and Programmes of other Committees.

Hydrographical Committee.

Chairman: Mr. Helge Thomsen.

I. Proceedings.

The Hydrographer reported on the work carried out by the Service Hydrographique since the last meeting.

Dr. Tait, acting Chairman of the Sub-Committee for Organization of Combined Hydrographical-Biological Investigations, reported on the work of the Sub-Committee. Recommendations 1 and 3 of the Sub-Committee were endorsed, and Recommendation 2 was strongly supported as Recommendation 1 of the Hydrographical Committee. A Sub-Committee was appointed for considering and arranging tests of methods of observing currents, consisting of Messrs. Carruthers (Chairman), Faure, Groen and Lumby. The Sub-Committee might co-opt biologists if found desirable.

Dr. Carruthers presented monthly charts giving the wind conditions over the northern North Sea. The Committee expressed its great interest in these charts and asked Dr. Carruthers to carry on this work and, if possible, to extend it to other areas. Future additions should be sent to the Service Hydrographique from where copies might be had on request.

A discussion took place on ways and means to make hydrographical investigations more useful to biologists. Recommendation 2 was carried.

Lt.-Cdr. Lumby laid before the Committee a Memorandum "On Steps to encourage Fishery-Hydrography", prepared by him in co-operation with Mr. Graham. Recommendation 3 was carried.

The Committee expressed its keen interest in the suggested publication of long-term programmes.

Dr. Lucas gave details of the plankton charts prepared by the Leith Laboratory.

The following lectures were given:—

Erkki Palosuo: Some new methodical investigations of the ice conditions in the Baltic.

Folke Koroleff: Dithizone as an analytical reagent for determination of traces of heavy metals in sea water.

The Chairman having expressed his wish not to stand for re-election, Lt.-Cdr. Lumby proposed Prof. Sverdrup for the office, who was elected unanimously.

II. Programme of Work.

It was agreed that besides the routine work special consideration should be given to:

(a) the preparation (and publication) of charts of surface temperature and salinity and wind conditions in the North Sea and adjacent waters as soon as possible after the data are available;

(b) the collection of more routine surface observations on lines across the North Sea;

(c) that more work should be done on the distribution of nutrient salts.

The members were asked to arrange for the data on surface temperature and salinity to be sent to Lt.-Cdr. Lumby as soon as possible after collection.

III. Recommendations.

1) The Hydrographical Committee expressed its appreciation of the generous offer made by German scientists through Dr. Carruthers for certain current measurements to be made, and recommends that advantage be taken of this offer in the southern North Sea where such measurements are of concern to fishery-biologists.

2) It was recommended that a special meeting on fishery-hydrography should be held on occasion of the Council-Meeting in 1951[1]).

3) It was recommended that the Regional, Fish, and Plankton Committees should be asked to arrange for:—

(a) The preparation (and publication) of tables showing the relative strengths of the year-classes, broods, and egg production of the main types of food-fish over a long series of years.

(b) The preparation and publication of charts showing the changes in the distribution of the fish throughout the year, and from year to year.

(c) The preparation of similar charts for the most important plankton organisms.

[1]) Endorsed by the Consultative Committee as Recommendation 3a.

Sub-Committee for Organization of Combined Hydrographical-Biological Investigations.

Presiding: Dr. J. B. Tait.

I. Proceedings.

In the absence of the Chairman, Dr. Eggvin, on account of illness, Dr. Tait was asked to take the Chair.

Dr. Tait summed up the work done during the years 1947—1949.

Reports on the investigations carried out were given by Lt.-Cdr. Lumby and Dr. Tait (hydrography) and by Professor Braarud (plankton).

Some discussion on the programme of future work took place. Recommendation 1 was carried.

Mr. Wimpenny made a plea for current-measurements on the plaice spawning grounds in the southern North Sea.

Dr. Carruthers said that such measurements could only be carried out with long-lasting instruments. The German Hydrographic Institute had 12 specimens of such an instrument and was willing to work them at places fixed by the Council without any expense to the Council. Recommendation 2 was carried.

Lt.-Cdr. Lumby laid before the Committee charts of surface temperature, surface salinity and wind in the North Sea and adjacent waters. For temperature and wind such charts could be prepared with very short delay, for salinity with a delay of 2—3 months.

Such charts were thought to be of immense interest, and Recommendation 3 was carried.

Dr. Eggvin was re-elected as Chairman.

II. Recommendations.

It is recommended to the Hydrographical Committee:

1) That consideration of a formal programme for continuance of hydrographical-biological investigations on the lines of the surveys of 1947, 1948 and 1949 be deferred for one year until more fully detailed reports on both the hydrographical and the biological work of these surveys are available.

2) That appreciation be expressed of the offer made by German scientists through Dr. Carruthers for certain current measurements to be made, and that advantage be taken of this offer in the southern North Sea where such measurements are of concern to fishery-biologists.

3) That monthly charts of surface temperature, surface salinity and surface phosphate distributions and also of wind be prepared and circulated with the minimum delay to fishery-biologists.

Plankton Committee.

Chairman: Dr. Poul Jespersen.

I. Proceedings.

Dr. Jespersen announced that twelve of the Plankton Identification Sheets were on the point of publication and that it was probable that another ten would be ready next year.

Contributions were then read by the following:—

Mr. J. Corlett: Phytoplankton collected at Weather Ships I and J in 1948 and 1949.

Prof. Trygve Braarud: Progress Report on the phytoplankton collections from the North Sea (May 1948) and on phytoplankton work at the Biological Laboratory, Oslo.

Melle J. Fleury: Note préliminaire sur les Copépodes pélagiques de la Manche capturés en surface au cours de la croisière du navire océanographique "Président Théodore Tissier" en 1949.

Prof. E. Steemann Nielsen: Investigations on the production of matter in the sea by means of tracer carbon.

Dr. P. Jespersen was proposed Chairman.

II. Recommendations.

1) Financial assistance should be given by the Council to Professor Trygve Braarud for the next

year in order to complete working up the nanoplankton collections made in the North Sea in May 1948[1]).

2) Support should be given to the requests made to the Hydrographical Committee as stated in the memorandum on "Steps to encourage Fishery Hydrography" by MICHAEL GRAHAM and J. R. LUMBY, and the Committee wishes to stress as a matter of first importance regular work on the distribution of nutrient salts.

3) A special meeting should be arranged to take place next year to review the effect of hydrographical conditions on the fisheries and to make specific recommendations[2]).

[1]) Endorsed by the Consultative Committee as Recommendation 7.

[2]) Endorsed by the Consultative Committee as Recommendation 3a.

Herring Committee.

Mr. ÁRNI FRIÐRIKSSON in the Chair.

I. Proceedings.

In the absence of Dr. W. C. HODGSON, Mr. FRIÐRIKSSON was asked to act as Chairman.

1) The subject of a closer collaboration between biologists and hydrographers was discussed and Recommendation 1 was adopted.

2) A long-term programme for future herring work was considered and Recommendation 2 was adopted.

3) Contributions

(a) Dr. K. A. ANDERSSON: On the stock of herring in the northern North Sea and the Skagerak during the season of 1949—1950.

(b) Dr. Å. V. TÅNING: On the occurrence of herring in relation to hydrographical conditions in the waters east of Iceland during the summer of this year.

(c) Prof. CH. GILIS: Some considerations on Belgium's exploitation of the North Sea herring, mostly based on market analyses in Belgian ports.

(d) M. P. DESBROSSES read a paper by Dr. J. ANCELLIN on French herring work in the North Sea during the last season.

(e) Dr. HÖGLUND: On the Swedish marking experiments of herring.

(f) Dr. AAGE J. C. JENSEN: A survey of the markings carried out on behalf of the Danish Biological Station.

(g) Mr. E. BERTELSEN: Marking experiments carried out by the Marine Biological Laboratory in Copenhagen. A new tag devised by him and Dr. TÅNING was demonstrated.

(h) Dr. LUCAS: On the Scottish tagging experiments in 1950.

(i) Mr. DEVOLD: The long-term fluctuations in the Scandinavian herring fisheries.

(k) Mr. AASEN: On the Icelandic—Norwegian herring tagging work.

4) Dr. HODGSON being unable to continue as Chairman Mr. FRIÐRIKSSON was unanimously elected.

II. Programme of Work.

It was decided that, in the absence of the Chairman, the general programme for the work during the coming year should be settled by correspondence.

III. Recommendations.

It was recommended that:

1. A special Committee should deal with the question of how a closer contact could best be reached between biologists and hydrographers in fisheries research[1]).

2. A manual (handbook) on the long-term activities of ICES should be prepared, and it should include the work on herring which the Committee considers to be one of the most urgent items in future research[2]).

[1]) Accepted by the Consultative Committee as Recommendation 3a.

[2]) Accepted by the Consultative Committee as Recommendation 5a.

Salmon and Trout Committee.

Mr. SVEN SØMME in the Chair.

I. Proceedings.

Mr. SVEN SØMME took the Chair in the unavoidable absence of the Chairman. Representatives from the various countries reported upon research work carried out as part of the scheme formulated in August 1946 in Stockholm.

The acting Chairman Mr. SØMME reported that the Chairman (Prof. KNUT DAHL) had been unable owing

to illness to prepare a joint report on the first three-year programme of salmon tagging. After discussion it was decided to accept the offer of Dr. WENT to prepare a small-scale map of western Europe on which each participating country would be asked to insert details of its salmon tagging results for the years 1947 to 1949 inclusive.

The report of the Irish Sea Salmon Sub-Committee was read with interest and the Committee expressed its appreciation of the co-operation of Northern Ireland in the matter. (Recommendation 1.)

Mr. SØMME read a communication in which he expressed the view that in order to prevent the complete destruction of stocks of Atlantic Salmon these fish should be protected against commercial fishing in international waters outside the Baltic. The Committee felt that, whilst there was some evidence in favour of such a proposal, further information would be necessary before this matter could be appropriately considered. Recommendation 2 was passed.

The relationship of hydrography and fisheries was also discussed and it was agreed to support the request of at least one other committee for a special meeting on this question.

The long-term programme was discussed and it was agreed that a handbook on the lines suggested and giving details of the Salmon programme laid by the Committee in August 1946 in Stockholm was desirable.

Mr. SVEN SØMME was proposed as Chairman for the forthcoming year.

II. Programme of Work.

It was decided to continue in the year 1951 the Salmon programme as laid down in August 1946 in Stockholm.

III. Recommendations.

1) Having heard the report of the Irish Sea Salmon Sub-Committee the Committee wishes to express its appreciation of the co-operation of the Northern Ireland authorities relative to salmon tagging along the coast of County Antrim. The Committee, therefore recommends that the Council should convey to the Northern Ireland authorities, through the usual channels, its appreciation of the co-operation given in 1950 in connection with the international salmon tagging scheme and should express the hope that tagging at Carnlough will be continued and the experiments extended to other stations along the coast of Northern Ireland[1]).

2) The Committee requests the Council to appoint a Sub-Committee to consider and report upon the desirability of protecting commercial fishing for the Atlantic Salmon in international waters outside the Baltic[2]).

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[1]) Endorsed by the Consultative Committee as Recommendation 6b.

[2]) Endorsed by the Consultative Committee as Recommendation 4.

Whaling Committee.

Chairman: Dr. N. A. MACKINTOSH.

I. Proceedings.

The Chairman recalled the recommendation of the meeting in 1949 "That the Committee shall meet again in 1950 and reconsider their position in relation to the International Whaling Commission", and suggested that the Committee's future should be considered after other business had been dealt with.

Mr. DOBSON gave a brief account of the second meeting of the Whaling Commission which had taken place in Oslo in July, but pointed out that certain alterations to the regulations would not come into force unless no objections were lodged during a period of ninety days. The Chairman referred to a memorandum on research which had been submitted to the Commission, and said that any additional suggestions would be welcome. The Commission were taking steps to encourage further whale marking.

Mr. FRIÐRIKSSON said that statistics of the earlier whaling in Iceland had been assembled, and details were being entered on punched cards. The Chairman said that the "Discovery II" and "William Scoresby" were at sea again; the former was completing a general survey of the Southern Ocean, and the latter had marked whales in south African waters. The collection of ovaries in the Antarctic was being continued.

The future of the Committee was then discussed at some length. The Chairman in summarizing the position said the general view was clearly against complete abolition of the Committee and that although it should not meet regularly as before there should be machinery for recalling it when some real object would be served. Recommendation II was passed.

The Minke whale, though a small species, has recently acquired economic importance, and the Committee were impressed with the value of the work described. They thought that any future meeting might be held for example to hear and discuss progress in some such new field of research.

II. Recommendation.

That regular meetings of the Whaling Committee should be suspended, but that Dr. MACKINTOSH be invited to act as Chairman or Convener of any meetings in the future that may appear to be desirable for the purpose of discussing matters connected with whales and whaling.

Shellfish Meeting.

Dr. HAVINGA in the Chair.

Recommendations.

1) A permanent organisation in the form of a Sub-Committee or Committee should be set up to arrange and convene meetings devoted to shellfish and the culture of various organisms[1]).

2) If the Council agrees to Recommendation (1) Dr. HAVINGA should be Chairman.

3) A Special Meeting on the culture of marine organisms should be held in 1951 either before or during the period of the General Meeting[2]).

[1]) Inherent in the Reorganisation Plan.

[2]) Not accepted by the Consultative Committee.

Statistical Committee.

Chairman: Dr. NILS ROSÉN.

Proceedings.

1) The *Bulletin Statistique* for 1945—46 was laid before the Committee.

2) The Chairman mentioned that material for *Bulletin Statistique* 1947 had been received from the member countries and were in the press.

3) The Chairman mentioned that forms to be filled out for 1948 had been sent to the member countries and hoped that they would be returned before the end of this year.

4) According to a proposal from Dr. WENT it was decided to send out the forms for 1949 as soon as possible.

5) During a discussion concerning the comparability of the statistics published by FAO and by Council, wishes were expressed to keep contact with FAO in that regard.

6) The Committee proposed that Dr. NILS ROSÉN be re-elected Chairman for the ensuing year.

VERSION FRANÇAISE

Rapport et Recommandations du Comité Consultatif.

Président: M. Michael Graham

I. Compte-rendu.

Le Président annonce avec tristesse la mort du Dr. Clark et demande aux membres d'élire un nouveau Président pour l'année entière et non pour la séance seulement.

M. Graham est élu à l'unanimité.

1) En l'absence du Dr. Hodgson, M. Friðriksson est invité et accepte de prendre la Présidence du Comité du Hareng.

2) Hydrographie des pêcheries.

Au cours de la première réunion, le Président lit une courte note sur le sujet[1]).

Les relations entre les problèmes de l'hydrographie des pêcheries et le programme du Sous-Comité pour l'Organisation des Recherches combinées Hydrographico-Biologiques est brièvement discuté. M. Helge Thomsen attire l'attention sur le fait que le Sous-Comité a entrepris un travail limité essentiellement pratique. Après quelques remarques pertinentes du Dr. Lucas, M. Wimpenny et Dr. Poulsen, il est nettement entendu que les problèmes d'hydrographie des pêcheries ne pourront pas être entièrement discutés, ni convenablement examinés au cours de la présente session et que deux années au minimum seront nécessaires pour leur examen. Au cours de la présente Assemblée, il sera demandé aux membres de présenter leurs suggestions dans leurs Comités et d'entendre ce que ces membres ont à dire.

Au cours de la 2ème réunion, une longue discussion s'engage sur l'hydrographie des pêcheries. Il s'en dégage les points suivants:

a) l'hydrographie détaillée sera mieux faite individuellement par les hydrographes; mais, en général, avec l'aide des documents du Service Hydrographique.

b) Il est encore nécessaire de choisir des séries limitées d'observations qui, si elles sont régulièrement poursuivies, fourniront des informations suffisamment importantes pour l'effort international demandé.

c) Il y a une demande pour des études hydrographiques et pour des avis sur des problèmes particuliers qui s'étendent à l'extérieur d'une région quelconque étudiée par une nation ou un comité. Pour satisfaire à ces demandes, une grande expansion du Service Hydrographique sera nécessaire.

d) Des données récentes sont demandées sur les changements observés d'une année à l'autre. Elles seront fournies pour les eaux adjacentes aux Iles Britanniques par les cartes offertes par l'Angleterre; leur approvisionnement pourra devenir éventuellement un service central et l'utilisation de cartes semblables pourra être adoptée dans les autres secteurs. La Recommandation 6 a est adoptée.

e) Il y a encore beaucoup à faire pour progresser dans la définition des problèmes biologiques demandant des études hydrographiques.

f) Il serait important de tenir une réunion spéciale pour reviser les exemples actuels des relations de l'hydrographie et des pêcheries, entendu que (α) le terme "hydrographie" soit interprêté dans son sens le plus large, (β) que les rapports visent à en évaluer les effets, particulièrement sur les pêcheries commerciales, (γ) que ces rapports soient mis en circulation bien avant la réunion. Le Dr. Lucas est nommé "Convener" et le Dr. Poulsen rapporteur de cette réunion. La Recommandation 3 a est adoptée.

g) Une connexion fondamentale entre l'hydrographie et les pêcheries doit être établie (ainsi que l'a exprimé le Comité du Secteur Nord-Est) entre les effets des conditions du milieu sur le poisson et les exigences du poisson sur le milieu ambiant. Référence est faite quant au travail du Dr. H. O. Bull du Laboratoire de Cullercoats, sa participation à la réunion spéciale sera la bienvenue. La Recommandation 3 b suit.

Le Président ajourne la discussion à l'année prochaine.

3) Considération des rapports et des épreuves déposées devant le Comité. Le "Progress Report" et les *Annales Biologiques* sont approuvés. Le Secrétaire Général demande des suggestions pour une réduction possible du Rapport Administratif. Après une courte discussion, il est décidé de poursuivre la publication des Rapports: les données scientifiques seront publiées dans les Annales et les matières purement administratives dans les Rapports Administratifs.

4) Programmes à long terme.

Au cours de la première réunion, le Président explique que devant le Bureau a été soulevée la question apportée par le programme présenté par M. Wimpenny pour les régions du nord. M. Le Gall dit qu'un programme similaire a été proposé pour le Comité Atlantique. Au cours de la deuxième réunion, après avoir considéré l'amplitude de la tâche de

[1]) Voir l'appendice B (texte anglais), p. 29.

préparer un manuel sur un programme à long terme, il est décidé de se contenter d'un document à l'usage propre du Conseil et la Recommandation 5 a est faite.

5) Comité des Mollusques, Crustacés et de la Pêche littorale.

Au cours de la première réunion, le Secrétaire Général recommande l'établissement d'un Comité et demande aux membres d'en décider.

Le Président reconnaît que le Hareng et les Mollusques et Crustacés ont droit à une plateforme internationale. Il désire, cependant, faire la nouvelle proposition, d'une réorganisation des Comités. Depuis que les Comités ont été organisés une grande augmentation numérique est intervenue, une réorganisation doit être envisagée avec amalgamation dans le même nombre de Présidences et de Vice-Présidences, soit: 8 Comités pour couvrir la totalité du sujet en leur donnant plus de souplesse. Quelques fonctions se recouvrent.

Un Sous-Comité, constitué par M. Graham, Président, M. Rollefsen, Dr. Blegvad, Dr. Tåning, M. le Gall, M. Lienesch et M. Thomsen, établira des propositions définitives. Le Professeur Sverdrup est adjoint à ce Comité.

Le rapport de ce Sous-Comité de Réorganisation[1]) est soumis à la deuxième réunion; des amendements dans le projet ayant été faits en comité. Le Président explique comment cette nouvelle organisation fonctionnera en pratique: les Présidents des Sous-Comités triant, selon leur intérêt, les contributions et les questions reçues de telle façon que chacune puisse être transmise dans le Comité approprié, Comités généraux ou Sous-Comités. D'autres questions sont posées et les membres qui avaient critiqué le plan présenté acceptent de réserver telles de leurs critiques qui n'ont pas été satisfaites jusqu'au moment où ce plan aura été essayé. Enfin, le Président encourage la prise en considération de cette révision.

Le rapport du Sous-Comité est adopté: Recommandation 2.

Le Président demande si quelqu'un désire d'autres commentaires sur l'organisation, mais les membres acceptent de passer au paragraphe suivant.

6) Les rapports de tous les Comités, qui ont été distribués, sont discutés et adoptés au cours de la deuxième réunion: Recommandation 1.

Considérant le Rapport Atlantique, le Président attire l'attention sur la précieuse coopération des U.S.A., offrant d'étudier les groupes sanguins des thons et des sardines dans le but de poursuivre des recherches sur les races.

L'utilisation de l'ASDIC et du sondage par écho pour la détection des bancs de poissons est discutée sur la recommandation du Comité du Secteur Nord-Est, voir Recommandation 5 b.

Dr. Poulsen remet en mémoire la protection de trois espèces de crustacés faite par le Comité de Transition. Le Président du Conseil intervient pour dire que la résolution du Conseil tient toujours et le Dr. Poulsen, sur la suggestion du Président du Comité, accepte de préparer un rapport mis à jour du point de vue scientifique sur la nécessité de cette protection.

La continuation de la publication des Fiches Plancton est adoptée. Le Président et les membres du Comité du Plancton rapportent que le Prof. Braarud a donné un compte-rendu intéressant et prometteur sur la progression dans l'étude des captures internationales de plancton. Voir Recommandation 7.

La recommandation du Comité du Saumon et de la Truite: que le marquage du saumon dans l'Irlande du Nord soit continué, est adoptée. Recommandation 6 b.

M. Sømme parle des recommandations de deux Comités de Secteur et du Comité du Saumon et de la Truite, exprimant les inquiétudes de voir s'installer une pêcherie dans les eaux internationales. Bien que certains membres doutent que le cas s'établisse, il est décidé de faire étudier cette question par un Sous-Comité et la Recommandation 4 est adoptée. MM. Sømme, Poulsen et Wimpenny sont nommés et chargés d'élire leur Président.

Sur une recommandation du Comité des Mollusques et Crustacés, la culture des organismes marins est estimée comme étant d'un champ trop restreint pour justifier une réunion spéciale, ou, si elle prend de l'extension, d'être d'un intérêt limité.

M. Rollefsen attire l'attention sur la nécessité de normaliser les indices des stocks de poisson en faisant remarquer que les facteurs: croissance, mortalité et reproduction sont en général les mêmes tandis que différents indices pour leur estimation sont en usage. Le Président suggère que les membres encouragent les contributions sur ce sujet qui conviendra pour les réunions générales.

Le meeting est clos.

II. Recommandations.

1. Rapports Généraux des Comités.

Les propositions suivantes sont approuvées par le Comité en plus de celles exposées séparément ensuite dans les rapports des divers Comités:

(a) Comité Atlantique: Forme normale des *Annales Biologiques*.

(b) Sud de la Mer du Nord: Données à recueillir et cartes à préparer par le Comité Hydrographique.

(c) Comité Hydrographique: Acceptation d'une offre allemande concernant les mesures de courant.

(d) Secteur de Transition: Protection de *Pandalus borealis*, etc.

(e) Comité du Plancton: Travail à faire sur la distribution des sels nutritifs.

(f) Comité de la Baleine: Sur des réunions futures possibles du Comité.

[1]) Voir l'Appendice A (texte anglais), p. 27.

2. Organisation du Conseil.

Que le Rapport du Sous-Comité de Réorganisation soit adopté et que toutes les suggestions pour des amendements soient adressées au Président avant le 1er Février 1951.

3. Réunions Scientifiques Spéciales.

(a) Qu'une réunion spéciale révise en 1951 les effets des conditions du milieu sur les poissons et la pêche (Convener: Dr. LUCAS; Rapporteur: Dr. POULSEN).

(b) Que le Dr. H. O. BULL soit invité à l'Assemblée du Conseil en 1951, aux frais du Conseil, pour participer à la Réunion Spéciale.

4. Protection de Poisson.

Qu'il soit établi un Sous-Comité pour considérer si la question d'une protection du saumon en mer dans les eaux du large est nécessaire (SØMME, POULSEN, WIMPENNY).

5. Matériaux pour les Travaux Ultérieurs.

(a) Qu'un programme à long terme à l'usage du Conseil soit rassemblé par le Président.

(b) Que le Président du Comité du Hareng recueille les besoins sur les sondeurs par écho et l'ASDIC pour la détection des bancs de poisson en un document dont des copies seront mises à la disposition des constructeurs qui seront invités à donner des informations complémentaires[1]).

6. Coopération Internationale.

(a) Que les documents nécessaires soient adressés en Angleterre dans le but de produire des cartes hydrographiques mensuelles des conditions de surface des mers voisines des Iles Britanniques.

(b) Que le Gouvernement de l'Irlande du Nord soit encouragé à continuer sa participation au programme de marquage du saumon recommandé par le Comité du Saumon et de la Truite.

7. Aide aux Travailleurs Scientifiques.

Que l'assistance au Professeur BRAARUD soit complétée pendant la prochaine année financière.

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[1]) Cette modification de la dernière phrase fut acceptée au Bureau par le Président dont la recommandation originale comprenait une offre pour une démonstration.

Rapports et Programmes des Comités des Secteurs.

Comité du Secteur Nord-Est.

Président: M. G. Rollefsen.

I. Compte-rendu.

1) Les contributions et les rapports suivants sont présentés:

(a) Gunnar Rollefsen: Distribution d'après l'âge de la morue de l'Arctique.

(b) Gunnar Rollefsen: La fréquence des stries de ponte dans les otolithes de morues marquées et recapturées.

(c) F. Devold: Rapport sur la croisière du R/V "G. O. Sars" en mer de Norvège en été 1950.

(d) O. Aasen: La durée des différents stades de maturité chez le hareng.

2) Une discussion sur "l'hydrographie et la pêche" montre:

(a) qu'il est souhaitable d'entreprendre un travail expérimental sur les exigences et les réactions des organismes marins en relation avec les facteurs physiques et chimiques;

(b) que les biologistes présentent leurs demandes d'informations hydrographiques d'une manière plus précise;

(c) que les hydrographes et biologistes essayent de présenter leurs résultats sous une forme leur convenant réciproquement.

3) Les programmes des bateaux de recherches pour l'année à venir sont présentés par l'Angleterre, la France et la Norvège.

4) M. G. Rollefsen est réélu Président.

II. Recommandations.

1) Le Comité fait sienne la recommandation du Comité Sud de la Mer du Nord pour une réunion spéciale sur l'effet des conditions hydrographiques sur les phénomènes biologiques en relation avec les pêches.

Il est aussi reconnu que les cartes mensuelles de températures de surface et de salinité seraient précieuses pour les biologistes.

2) Le Comité considère que l'appareil ASDIC est important pour détecter et prospecter les bancs de hareng et autres poissons; de plus, il estime que les Etats Membres seraient bien avisés d'équiper leurs vaisseaux de recherches avec ces appareils[1]).

3) Le Comité est d'avis de préparer un manuel donnant les lignes générales du futur travail à exécuter au Conseil International pour l'Exploration de la Mer.

4) Le Comité demande au Comité Consultatif de prendre en considération la protection à accorder au saumon de l'Atlantique contre la pêche commerciale dans les eaux internationales en dehors de la Baltique.

[1]) Approuvée par le Comité Consultatif sous la Rec. 5b.

Comité du Secteur Nord-Ouest.

Président: Dr. Å. Vedel Tåning.
Vice-Président: M. Árni Friðriksson.

I. Compte-rendu.

1) Communications.

(a) Dr. Paul Hansen fait un compte-rendu de ses recherches dans les eaux du Groënland occidental au cours de la dernière saison. Il explique une série de projections montrant la distribution des alevins de morue, flétan, flétan du Groënland et Sebastes, trouvés par le "Dana" dans le détroit de Davis en Juillet 1950. Il se dégage de ses recherches que le nombre de larves de morues est plus grand qu'il y a 25 ans et que la croissance des larves pendant leurs stades pélagiques est actuellement plus rapide. Il donne une analyse de la composition d'après l'âge du stock et estime qu'il apparait évident que le stock du Groënland occidental devient de plus en plus indépendant.

(b) M. B. Rasmussen rend compte de ses investigations sur les lieux de pêche du Groënland occidental et montre les relations entre la densité des morues sur les bancs et les conditions hydrologiques. En 1950, les conditions de pêche ont été bien meilleures qu'au cours des années précédentes par suite de l'élévation de la température aux accores des bancs.

(c) Dr. J. H. Fraser résume un exposé de M. A. Saville dans lequel il traite de la quantité d'œufs d'églefins dans la zone des Feroës, du nombre subséquent de larves et du taux de mortalité des larves aux différents stages. Il conclut que la ponte de l'année a été inférieure à la normale.

(d) M. J. Jónsson fait un examen du stock de morues d'Islande. Il donne une analyse de sa composition, d'après l'âge, au cours des dernières années, puis de l'âge moyen atteint à la première maturité sexuelle. Il indique comment évaluer l'importance du recrutement au moyen des marques de ponte sur les otolithes et, finalement, démontre comment il apparait possible de prédire le rendement de la pêche.

(e) Finalement, M. Árni Friðriksson résume les résultats qu'il a obtenus avec le Dr. G. Timmermann dans l'étude des aires de ponte du hareng au large de la côte sud d'Islande, au cours du printemps 1950. Une cinquantaine de lieux de ponte ont été trouvés au moyen de harengs bouvards, d'œufs de harengs sur le fond et d'églefins dont l'estomac était plein d'œufs ("spawny haddock"). La ponte a lieu depuis les Iles Westman jusqu'à Reykjanes, du milieu de Mars jusqu'à la fin d'Avril, sur les fonds de gravier de 50 m. à 100 m. de profondeur, dans des eaux de 6 à 7° C.

2) Le Président et le Vice-Président sont réélus.

II. Programme de Travail.

Pas de modifications au programme général adopté l'an dernier.

En accord avec ce qui est de coutume depuis ces dernières années, il est décidé que les programmes de travail détaillés des différents pays ainsi que la coopération entre les membres seront fixés au cours de cet hiver par correspondance.

III. Recommandations.

1. Le Comité endosse la recommandation passée par les Comités du Sud de la Mer du Nord et du Nord-Est: qu'il soit tenu une réunion spéciale sur les effets des conditions hydrologiques sur les phénomènes biologiques constatés sur les pêcheries.

2. Qu'un manuel soit préparé, indiquant les vues actuelles du travail, type devant être fait dans l'avenir par le Conseil[1]).

3. Que le Comité Consultatif considère les mesures proposées par le Comité du Nord-Est pour la protection du saumon dans l'Atlantique[2]).

Sous-Comité de la Question des Feroës.

Le Président Dr. Vedel Tåning donne un compte-rendu des progrès réalisés depuis la dernière réunion.

Les collections de matériel etc. seront maintenant examinées par un petit laboratoire de recherches pour la pêche à Thorshavn créé par le Gouvernement Danois et le gouvernement local.

Le Président demande aux membres de lui procurer des mensurations de morues de la région ou faites sur les marchés et par les navires de recherches. Une coopération plus étroite entre l'Ecosse et le Danemark, concernant la distribution des œufs et des larves de morues, sera établie par correspondance.

La Norvège et l'Angleterre essayeront aussi de fournir du matériel en provenance du secteur. Ce travail sera arrangé par correspondance.

[1]) Approuvée par le Comité Consultatif sous la Rec. 5a.
[2]) Approuvée par le Comité Consultatif sous la Rec. 4.

Comité Atlantique.

Président: Professeur J. LE GALL.

I. Compte-rendu.

1) Avancement des Travaux.

A. Sardine. Un bref commentaire est fait sur les résultats des travaux présentés dans les Sous-Comités sur la biologie de la sardine et des espèces voisines.

Le Dr. RAMALHO expose les observations qu'il a faites au cours d'une récente mission en Californie sur les recherches entreprises sur la biologie et la pêche de ce poisson sur la côte du Pacifique.

B. Thons. Les résultats des recherches poursuivies dans les trois Sous-Comités sur la biologie et la pêche des Thonidés sont résumées rapidement.

M. LE GALL commente les résultats des dernières observations faites sur le germon (biométrie, âge, classes de recrutement).

M. H. HELDT présente une contribution à l'étude de la biologie de *Germo alalonga* d'après l'examen des écailles.

Le Dr. LIONEL WALFORD (Fish and Wildlife Service, U.S.A.) fait état des moyens mis en œuvre aux U.S.A. pour l'étude de la biologie et du comportement des Thonidés. Il insiste sur l'intérêt international et mondial de ces études et sur la nécessité d'une collaboration étroite entre les chercheurs. Il expose, enfin, les récents travaux du Muséum de Sérologie de la Rutgers University, New Jersey, et la possibilité d'utiliser les sérums sanguins des animaux pour distinguer les différentes populations géographiques dans une même espèce. Cette méthode peut être appliquée à l'étude du stock des diverses espèces de thons.

Des frottis de sang et du sérum seront adressés au Dr. LIONEL WALFORD pour la poursuite de ces recherches en collaboration avec les laboratoires européens.

C. Merlu. Des communications présentées au Sous-Comité du Plateau Continental Africain il ressort que des recherches sont à faire sur les différentes populations des espèces du genre Merluccius de l'Atlantique Est.

2) Le Prof. J. LE GALL est réélu Président.

II. Programme des Travaux.

Le Comité coordonne les programmes des travaux présentés dans les trois Sous-Comités pour l'année 1950—51. Il décide de poursuivre ses travaux sur la biologie des Clupéidés et Thonidés suivant le même plan et de mettre au programme des travaux du Comité Atlantique pour l'année prochaine: Etude générale du merlu: systématique, biologie, pêche.

Des cartes de distribution (cartes mensuelles) de la sardine et du merlu seront préparées.

M. J. FURNESTIN se chargera de la compilation des documents pour l'élaboration des cartes de la sardine et M. LETACONNOUX pour celles du merlu.

III. Recommandations.

1) Le Comité Atlantique recommande que la discipline qu'il s'impose dans l'élaboration et la présentation des textes destinés aux *Annales Biologiques* soient respectée dans les autres Comités contribuant à la préparation de ces Annales.

2) Le Comité Atlantique et ses trois Sous-Comités constatant que, dans le vaste domaine géographique qu'il couvre, les observations hydrologiques faites jusqu'à cette date sont encore en nombre insuffisant pour en tirer des conclusions certaines; puis, que les moyens matériels lui manquent pour apporter une contribution efficace pour leur achèvement, recommande que soit retenue la recommandation faite par le Comité Hydrographique, pour faciliter, dans l'intérêt général, la collaboration entre les biologistes et les hydrologistes du Conseil, et utiliser d'une manière effective les résultats des investigations entreprises par les uns et par les autres dans le sein du Conseil[1]).

[1]) Approuvée par le Comité Consultatif sous la Rec. 3a.

Sous-Comité du Plateau Continental Atlantique Européen.

Président: Dr. F. Navarro.

I. Compte-rendu.

1) Communications.

P. Desbrosses: Observations sur la sole, *Solea solea* (L.), des côtes de Bretagne.

R. Letaconnoux: Le stock de merlu dans le Golfe de Gascogne en 1949.

L. Bellón: Résumé d'un rapport sur le *Neothunnus albacora* (Lowe).

M. Creach: Sur le *Scomberesox saurus* du Golfe de Gascogne.

2) Dr. Navarro est réélu Président.

Sous-Comité du Plateau Continental Atlantique Africain.

Président: Dr. Jean Furnestin.

I. Compte-rendu.

1) Notes et communications présentées au Sous-Comité:

J. Furnestin: Hydrologie des côtes marocaines (1949).

M.-L. Faure: Le zooplancton de la zone côtière du Maroc (1949).

J. Furnestin & M.-L. Faure: La reproduction de la sardine et de l'anchois dans la zone côtière du Maroc au cours de l'année 1949.

C. Maurin: Le merlu des côtes du Maroc.

R. Letaconnoux: Le merlu de la côte d'Afrique.

J. Cadenat: Les merlus de la côte occidentale d'Afrique.

R. Coupe: *Pagellus acarne.*

R. Coupe: Les Sparidés des côtes du Maroc.

F. Navarro: Les fonds de pêche de la côte du Sahara au sud du Cap Juby.

E. Postel: La pêche au chalut sur les côtes du Sénégal.

E. Postel: Les Thonidés de la presqu'île du Cap Vert.

J. Cadenat: Quelques Scombridae des Iles du Cap Vert.

E. Postel: L'exploitation des requins au Sénégal.

E. Postel: Quelques températures et salinités sur la côte ouest-africaine.

2) Le Dr. Jean Furnestin est réélu Président.

Sous-Comité de la Méditerranée Occidentale.

Président: M. Henri Heldt.

I. Compte-rendu.

1) Rapport Administratif. Le Président rend compte des travaux effectués par les différents Etats dans le secteur méditerranéen, développant l'exposé de ce sujet publié dans le Rapport Administratif. 1949.

2) Communications. Les communications suivantes sont présentées et discutées:

L. Bellón: Rapport sur *Neothunnus albacora.*

L. Bellón: Note sur la nourriture de *Thunnus thynnus.*

F. Navarro: Quelques aspects de la pénétration du plancton atlantique en Méditerranée.

H. Heldt: Quelques résultats positifs de la croisière du "President Théodore Tissier" dans les mers tunisiennes (1949).

H. Heldt: Contribution à l'étude de la biologie du germon d'après l'examen d'une écaille.

A la demande du Président le Gall, la présentation de cette dernière communication est reportée à la réunion du Comité Atlantique.

3) M. Henri Heldt est réélu Président.

Comité du Nord de la Mer du Nord.

Président: Dr. C. E. Lucas.

1. Compte-rendu.

1) Communications.

Mémoires du Dr. Carruthers, M. Parrish, Dr. Cooper et du Dr. Tait, sur la question des relations entre l'hydrographie et la pêche.

Le mémoire du Dr. Carruthers lance un appel aux hydrographes des pêcheries pour qu'ils revisent leurs méthodes, prenant une fois de plus pour exemple l'étude détaillée de l'influence des vents sur la mer et l'étude des courants. Il présente ensuite sous forme d'un tableau schématique les données sur les vents à travers la Mer du Nord septentrionale pour les années 1900 à 1949 (préparé par le Dr. Dietrich) pouvant être comparées aux variations annuelles d'abondance du poisson et des autres organismes marins.

M. Parrish présente ensuite un rapport sur la relation entre ces données et celles des naissances annuelles d'églefins dans le secteur couvrant la période 1916—48 conduisant à la conclusion que l'importance des classes annuelles est déterminée durant la phase pélagique. Les deux séries de données montrent, à une ou deux exceptions près, une corrélation frappante. M. Parrish esquisse ensuite l'hypothèse déduite par les collègues du Dr. Carruthers, M. Veley et M. Lowford, concernant le mécanisme de cette correlation et le Dr. Carruthers présente des notes exposant leur dernier point de vue selon lequel le grand tourbillon du Nord de la Mer du Nord du Dr. Tait jouerait un rôle important.

Le mémoire du Dr. Cooper est résumé par M. Steven. Il présente un plaidoyer pour un redoublement d'efforts des hydrographes travaillant dans les eaux peu profondes. Le Dr. Tait, d'autre part, prend la défense des méthodes classiques de travail des hydrographes dans les eaux du nord de la Mer du Nord et de l'océan voisin, tout en reconnaissant la valeur des recherches météorologiques et chimiques associées.

Dans un second travail, le Dr. Tait expose une méthode dérivée d'augmentation d'intégrations de températures (températures accumulées) qu'il estime devoir être utile aux biologistes dans leurs études des œufs, du développement larvaire, etc.

D'autres contributions comprennent des notes sur les opérations de marquages de juliennes et de harengs en Suède, sur le travail des Norvégiens sur les œufs et larves de sprats et sur les recherches écossaises en 1950.

2) Le Dr. C. E. Lucas est réélu Président.

II. Programme de Travail.

Un tirage préliminaire du programme de l'Ecosse pour l'année 1951 est mis en circulation et les autres représentants indiquent le travail que leur pays se propose de poursuivre. La France, la Belgique, la Hollande, la Norvége et la Suéde ont l'intention de travailler dans le secteur.

III. Recommandations.

1) Le Comité est pénétré de l'urgence qu'il y a à mettre aussitôt que possible à la disposition des biologistes des pêches: les "normales" et "anomalies" hydrographiques. Le Comité est d'avis, en particulier, pour ce qui a trait à des problèmes précis (ponte, développement larvaire, etc.), que les données résumées sur les vents (telles celles qui ont été présentées par le Dr. Carruthers pour le nord de la Mer du Nord) et les renseignements sur les températures accumulées (tels ceux présentés par le Dr. Tait) peuvent être d'une réelle valeur pour les biologistes et autres chercheurs et il exhorte vivement le Comité Consultatif à demander que ces rapports et d'autres similaires (par exemple sur les courants marins) soient mis à jour et poursuivis[1]).

2) Avec de tels projets en vue, le Comité est d'accord pour qu'une réunion spéciale se tienne en Octobre 1951 pour examiner les mémoires qui évalueront l'effet des phénomènes hydrographiques sur les organismes marins, particulièrement les poissons comestibles[2]).

3) Le Comité fait sienne la recommandation émanant du Comité du Sud de la Mer du Nord, de préparer un manuel du programme à long terme du Conseil, qui serait basé sur les programmes déjà arrêtés pour les secteurs septentrionaux[3]).

[1]) Approuvée par le Comité Consultatif sous la Rec. 6a.
[2]) Approuvée par le Comité Consultatif sous la Rec. 3a.
[3]) Approuvée par le Comité Consultatif sous la Rec. 5a.

Comité du Sud de la Mer du Nord.

Président: M. R. S. Wimpenny.

I. Compte-rendu.

Des communications sont présentées par le Dr. Havinga sur les variations diurnes dans les captures de poissons de chalut et par M. Desbrosses sur la dorade grise en Manche. En liaison avec le Sous-Comité de la Pêche comparative, des mémoires sont présentés par M. Parrish: — sur le pouvoir de capture des chaluts de Lowestoft et d'Aberdeen utilisés sur des fonds à poissons plats; — sur des expériences faites pour déterminer l'effet de l'emploi de petites mailles sur le rendement de la pêche du chalut; — puis sur des expériences concernant le rétrécissement des mailles du cul-de-chalut; par M. Richardson, sur un résumé du travail effectué à l'écho-sondeur par le laboratoire de Lowestoft depuis 1947; et par M. Trout au nom de M. Margetts sur la forme du chalut en action.

M. Wimpenny est réélu Président.

II. Programme de Travail.

Il est décidé que les membres du Comité échangeront ou feront circuler leurs programmes de travail définitif dès qu'ils seront prêts. En attendant, des programmes provisoires sont présentés à la réunion pour l'Angleterre et la Belgique, les autres membres esquissant leurs programmes de vive voix. Il est constaté que le travail projeté est semblable à celui en cours, sauf pour le cas de l'Angleterre où le recensement des œufs et larves de plies dans le sud-ouest de la Mer du Nord se spécialisera davantage dans les larves, ainsi que pour la Hollande où un travail additionnel sera entrepris sur l'effet diurne et celui des marées sur les captures de poissons de chalut et de larves de plies.

Pour la Belgique: salinité, température et des échantillons de gros plancton seront pris chaque mois à quatre stations entre Deal et Gravelines et au bateau-feu de West-Hinder, chaque jour pour la température et la salinité et deux fois par semaine pour le plancton à filet fin et à filet à grandes mailles. En outre, la Belgique entreprendra des recherches sur la pêche à la crevette par l'emploi de filets de 18, 20, 22 et 24 mm., puis sur la pêche des poissons de fond, principalement la plie, avec des mailles de 40, 80 et 90 mm.

III. Recommandations.

1) Que le Comité Hydrographique soit sollicité d'effectuer:

(a) la préparation et la publication de cartes sur les conditions des eaux en Mer du Nord et dans les mers adjacentes aussitôt que possible après réception des données. Si les échantillons de profondeur ne sont pas en nombre suffisant pour être utilisés, des cartes sur les conditions en surface seront préférables à l'absence de carte;

(b) la collecte d'un plus grand nombre d'observations de surface sur les lignes traversant le sud de la Mer du Nord;

(c) les mesures régulières des courants et des vents dans le sud de la Mer du Nord;

(d) la préparation de nouvelles séries des valeurs moyennes de température et de salinité et la publication régulière des anomalies mensuelles et annuelles pour certaines régions définies;

(e) un travail accru sur la distribution des sels nutritifs.

2) Que le Conseil tienne une réunion spéciale en 1951 pour passer en revue les effets des conditions hydrographiques sur les pêches[1]).

3) Que le "programme à long terme pour les secteurs du nord" soit étendu, de manière à couvrir tous les secteurs du Conseil et soit complété par des références et de courtes descriptions des engins et des méthodes, de façon à pouvoir servir de manuel ou guide pour le programme à long terme du Conseil[2]).

[1]) Approuvée par le Comité Consultatif sous la Rec. 3a.
[2]) Approuvée par le Comité Consultatif sous la Rec. 5a.

Rapports et Programmes des autres Comités.

Comité Hydrographique.

Président: M. Helge Thomsen.

I. Compte-rendu.

L'Hydrographe fait son rapport sur le travail effectué par le Service Hydrographique depuis la dernière réunion.

Le Dr. Tait, faisant fonction de Président du Sous-Comité pour l'Organisation de Recherches combinées Hydrographico-Biologiques, expose le travail du Sous-Comité.

Les Recommandations 1 et 3 du Sous-Comité sont approuvées et la Recommandation 2 est vivement appuyée par le Comité Hydrographique qui la présente comme Recommandation 1. Un Sous-Comité est désigné pour l'examen et la mise au point des méthodes d'observation des courants, comprenant MM. Carruthers (Président), Faure, Groen et Lumby. Le Sous-Comité pourra admettre des biologistes s'il est considéré comme souhaitable.

Le Dr. Carruthers présente des cartes mensuelles qui indiquent les conditions des vents sur le nord de la Mer du Nord. Le Comité manifeste son grand intérêt pour ces cartes, prie le Dr. Carruthers de continuer ce travail et, si possible, de l'étendre à d'autres secteurs. Des additions seront adressées au Service Hydrographique qui pourra en envoyer des copies à la demande.

Une discussion s'ouvre sur les moyens de faire des recherches hydrographiques plus utiles aux biologistes. La Recommandation 2 est adoptée.

Le Lt.-Cdr. Lumby présente au Comité un mémoire "Efforts pour encourager l'Hydrographie des Pêches" préparé en collaboration avec M. Graham. La Recommandation 3 est adoptée.

Le Comité exprime son vif intérêt à la publication, qui a été suggérée, de programmes à long terme.

Le Dr. Lucas donne des détails sur les cartes de plancton préparées par le laboratoire de Leith.

Les études suivantes sont présentées:

Erkki Palosuo: Quelques nouvelles recherches méthodiques sur les conditions glaciaires en Baltique.

Folke Koroleff: La dithizone comme réactif d'analyse pour la détermination des traces de métaux lourds dans l'eau de mer.

Le Président ayant exprimé son désir de ne pas être réélu, le Lt.-Cdr. Lumby propose le Prof. Sverdrup qui est élu à l'unanimité.

II. Programme de Travail.

On est d'accord sur la continuation du travail routinier et la prise en considération de:

(a) la préparation (et publication) de cartes des températures de surface, des conditions de salinités et de vents dans la Mer du Nord et les eaux voisines, aussitôt que possible après la réception des données;

(b) la collecte d'observations de surface plus nombreuses sur les lignes traversant la Mer du Nord;

(c) un travail accru sur la distribution des sels nutritifs.

Les membres sont priés de faire en sorte que les données sur les températures de surface et les salinités soient adressées au Lt.-Cdr. Lumby aussitôt que possible après leur relevé.

III. Recommandations.

1) Le Comité Hydrographique apprécie l'offre généreuse faite par les scientistes allemands par l'intermédiaire du Dr. Carruthers, de faire certaines mesures de courants, et recommande que l'on profite de cette offre dans le sud de la Mer du Nord où de telles mesures intéressent les biologistes des pêches.

2) Il est recommandé qu'une réunion spéciale sur l'hydrographie des pêcheries se tienne à l'occasion de la réunion du Conseil en 1951[1]).

3) Il est recommandé que les Comités de secteurs, de poissons et du plancton prennent leurs dispositions pour:

(a) la préparation (et publication) de tableaux montrant l'importance relative des classes annuelles, des pontes et de la production d'œufs des principaux types de poissons comestibles sur une longue période d'années;

(b) la préparation et publication de cartes montrant les changements dans la répartition du poisson au cours de l'année et d'une année à l'autre;

(c) la préparation de cartes semblables pour les principaux organismes planctoniques.

[1]) Approuvée par le Comité Consultatif sous la Rec. 3a.

Sous-Comité pour l'Organisation de Recherches combinées Hydro-Biologiques.

Sous la Présidence du Dr. J. B. Tait.

I. Compte-rendu.

En l'absence du Président, le Dr. Eggvin, souffrant, le Dr. Tait est prié de prendre la présidence.

Le Dr. Tait résume le travail accompli durant les années 1947—1949.

Des rapports sur les recherches effectuées sont présentés par le Lt.-Cdr. Lumby et le Dr. Tait (hydrographie) et par le Professeur Braarud (plancton).

Suit une discussion sur le programme du travail futur. La Recommendation 1 est adoptée.

M. Wimpenny présente un plaidoyer en faveur des mesures de courants sur les lieux de ponte de la plie dans le sud de la Mer du Nord.

Le Dr. Carruthers dit que de telles mesures ne pourront être effectuées qu'avec des instruments de longue durée. L'Institut Hydrographique d'Allemagne a 12 exemplaires de cet instrument et est désireux de les utiliser aux endroits fixés par le Conseil, sans frais pour le Conseil. La Recommandation 2 est adoptée.

Le Lt.-Cdr. Lumby présente au Comité des cartes de températures de surface, de salinités de surface et des vents en Mer du Nord et dans les eaux adjacentes. Pour la température et le vent, de telles cartes pourront être préparées dans un très court délai, pour la salinité avec un délai de 2—3 mois.

De telles cartes sont estimées d'un immense intérêt et la Recommandation 3 est adoptée.

Le Dr. Eggvin est réélu Président.

II. Recommandations.

Il est recommandé au Comité Hydrographique que:

1) L'examen d'un programme précis pour la continuation des recherches hydrographico-biologiques sur les lignes des observations de 1947, 1948 et 1949 soit ajourné pour une année, jusqu'à ce que des rapports plus détaillés sur le travail à la fois hydrographique et biologique effectué au cours de ces recherches soient utilisables.

2) Soit prise en considération: l'offre faite par les scientistes allemands par l'intermédiaire du Dr. Carruthers, d'effectuer certaines mesures de courants et que l'on profite de cette offre dans le sud de la Mer du Nord où de telles mesures intéressent les biologistes des pêches.

3) Des cartes mensuelles de distribution des températures de surface, des salinités en surface et des phosphates en surface, ainsi que des vents soient préparées et mises en circulation dans les plus courts délais aux biologistes des pêches.

Comité du Plancton.

Président: Dr. P. Jespersen.

I. Compte-rendu.

Le Dr. Jespersen annonce que douze des Fiches Plancton sont en cours de publication et qu'il est probable que dix autres seront prêtes l'an prochain.

Les contributions suivantes sont lues:

M. J. Colett: Phytoplancton recueilli par les navires météorologiques I et J en 1948 et 1949.

Prof. Trygve Braarud: Rapport sur l'avancement des travaux concernant les collections de phytoplancton de la Mer du Nord (Mai 1948) et sur le phytoplancton au Laboratoire de Biologie d'Oslo.

Mlle J. Fleury: Notes préliminaires sur les copépodes pélagiques de la Manche pêchés en surface au cours de la croisière du navire océanographique "Président Théodore Tissier" en 1949.

Prof. E. Steemann Nielsen: Recherche sur la production de matière dans la mer par la méthode de "carbones marqués".

Le Dr. Jespersen est proposé comme Président.

II. Recommandations.

1) Qu'une aide financière soit donnée l'an prochain, par le Conseil au Professeur Trygve Braarud pour compléter l'étude des collections de nannoplancton faites dans la Mer du Nord en Mai 1948[1]).

2) Qu'un soutien soit apporté aux requêtes faites par le Comité Hydrographique telles que l'établit le mémorandum "Efforts pour encourager l'Hydrographie des Pêches" par Michael Graham et J. R. Lumby et que le Comité veuille considérer comme une question de première importance la régularité d'un travail sur la distribution des sels nutritifs.

3) Qu'une réunion spéciale soit organisée pour l'année prochaine pour revoir l'effet des conditions hydrographiques sur les pêches et faire des recommandations spéciales[2]).

[1]) Approuvée par le Comité Consultatif sous la Rec. 7.
[2]) Approuvée par le Comité Consultatif sous la Rec. 3a.

Comité du Hareng.

M. Á. Friðriksson préside.

I. Compte-rendu.

En l'absence du Dr. W. C. Hodgson, M. Friðriksson est prié de faire fonction de Président.

1) La question d'une collaboration plus étroite entre biologistes et hydrographes est discutée et la Recommandation 1 est adoptée.

2) Un programme à long terme pour le travail du hareng est pris en considération et la Recommandation 2 est adoptée.

3) Communications.

(a) Dr. K. A. Andersson: Sur le stock de hareng dans le nord de la Mer du Nord et le Skagerak pendant la saison 1949—50.

(b) Dr. Å. V. Tåning: Sur la présence du hareng en liaison avec les conditions hydrologiques dans les eaux orientales de l'Islande pendant l'été de cette année.

(c) Prof. Ch. Gilis: Quelques considérations sur l'exploitation belge du hareng de la Mer du Nord, basées surtout sur des examens effectués dans les ports de Belgique.

(d) M. P. Desbrosses lit un mémoire de M. J. Ancellin sur les travaux français sur le hareng de la Mer du Nord durant la dernière saison.

(e) Dr. Höglund: Sur les expériences de marquages suédoises sur le hareng.

(f) Dr. Aage J. C. Jensen: Examen des marquages effectués sous les auspices de la Station Biologique Danoise.

(g) M. E. Bertelsen: Expériences de marquages effectuées par le Laboratoire de Biologie Marine de Copenhague. Une nouvelle marque inventée par lui et le Dr. Tåning est présentée.

(h) Dr. Lucas: Sur les expériences écossaises de marquages en 1950.

(i) M. Devold: Les fluctuations de longue durée dans les pêcheries harenguières de Scandinavie.

(k) M. Aasen: Sur les travaux de marquage du hareng islando-norvégien.

II. Programme de Travail.

Il est décidé, qu'en l'absence du Président, le programme général du travail pour l'année prochaine sera établi par correspondance.

III. Recommandations.

Il est recommandé que:

1) Un Comité spécial s'occupe des conditions dans lesquelles un contact plus étroit pourrait être établi entre biologistes et hydrographes dans les recherches sur la pêche[1]).

2) Un manuel sur les activités à long terme du Conseil International soit préparé et qu'il contienne le travail sur le hareng que le Comité considère comme l'un des plus urgents dans la recherche future[2]).

[1]) Acceptée par le Comité Consultatif sous la Recommandation 3a.

[2]) Acceptée par le Comité Consultatif sous la Recommandation 5a.

Comité du Saumon et de la Truite.

M. Sven Sømme préside.

I. Compte-rendu.

En l'absence du Président empêché, M. Sømme prend la présidence. Les représentants des divers pays font état des travaux de recherches effectués selon les plans établis en Août 1946 à Stockholm.

Le Président en fonction rend compte que le Président (Prof. Knut Dahl), malade, n'a pu préparer le rapport sur les trois premières années d'expériences de marquage de saumons.

Il est décidé après discussion d'accepter l'offre du Dr. Went de préparer une carte à petite échelle de l'Europe occidentale sur laquelle chaque pays inscrira les détails des résultats des expériences de marquage de 1947 à 1949 inclus.

Le rapport du Sous-Comité du Saumon de la Mer d'Irlande est suivi avec intérêt et le Comité exprime son appréciation pour la coopération de l'Irlande du Nord (Recommandation 1).

M. Sømme lit une communication dans laquelle il exprime l'idée que: pour éviter la destruction complète des stocks de saumons Atlantiques, ces poissons doivent être protégés contre les pêcheries commerciales dans les eaux internationales à l'extérieur de la Baltique. Le Comité estime que, s'il y a quelques faits évidents en faveur d'une telle proposition, des informations complémentaires sont encore nécessaires avant que cette question puisse être considérée convenablement.

Les relations de l'hydrographie avec la pêche sont également discutées et il est adopté d'appuyer la requête d'un des autres Comités au moins en faveur d'une réunion spéciale sur la question.

Le programme à long terme est discuté et il est adopté qu'il serait désirable que le manuel établi sur le plan suggéré donnât les détails sur le programme du saumon adopté par le Comité en Août 1946 à Stockholm.

M. Sven Sømme est proposé comme Président pour l'année suivante.

II. Programme de Travail.

Il est décidé de poursuivre au cours de 1951 le programme tel qu'il a été établi en Août 1946 à Stockholm.

III. Recommandations.

1) Le rapport du Sous-Comité du Saumon de la Mer d'Irlande entendu, le Comité désire exprimer sa satisfaction pour la collaboration des autorités de l'Irlande du Nord au sujet du marquage de saumon sur la côte du Comté d'Antrim. Le Comité recommande donc que le Conseil adresse aux autorités de l'Irlande du Nord, par les voies habituelles, sa satisfaction pour la coopération apportée en 1950, en liaison avec le plan international de marquage du saumon et exprime l'espoir que les marquages à Carnlough seront continués et qu'ils soient étendus à d'autres stations le long des côtes de l'Irlande du Nord[1]).

2) Le Comité demande au Conseil de nommer un Sous-Comité pour examiner et faire un rapport sur le désir d'une protection de la pêche commerciale du Saumon Atlantique dans les eaux internationales à l'extérieur de la Baltique[2]).

[1]) Approuvéé par le Comité Consultatif sous la Rec. 6b.
[2]) Approuvée par le Comité Consultatif sous la Rec. 4.

Comité de la Baleine.

Président: Dr. N. A. Mackintosh.

I. Compte-rendu.

Le Président rappelle la recommandation de la réunion de 1949 "que le Comité se réunira à nouveau en 1950 et reconsidérera la position au sujet de la Commission Internationale de la Baleine" et il suggère que l'avenir du Comité soit examiné après que les autres questions à l'ordre du jour auront été étudiées.

M. Dobson donne un bref compte-rendu de la 2ème réunion de la Commission Internationale de la Baleine qui s'est tenue à Oslo en Juillet, mais souligne que certaines modifications à la réglementation ne seront pas mises en application à moins qu'aucune objection n'ait été soulevée pendant une période de 90 jours. Le Président fait état d'un mémorandum sur les recherches soumis à la Commission et dit que toute autre suggestion serait la bienvenue. La Commission prendra ses dispositions pour encourager de nouveaux marquages de baleines.

M. Friðriksson dit que les statistiques sur les chasses antérieures de la baleine en Islande ont été rassemblées et relevées sur des fiches pointées. Le Président dit que le "Discovery II" et le "William Scoresby" sont de nouveau à la mer. Le premier a complété une surveillance générale des Mers du Sud et le dernier a marqué des baleines dans les eaux de l'Afrique du Sud. La collection d'ovaires de baleines de l'Antarctique est continuée.

L'avenir du Comité est discuté ensuite. Le Président, résumant la situation, dit que l'opinion générale est contre une abolition complète du Comité et que, bien qu'il ne se réunira plus régulièrement comme par le passé, un organisme doit exister qui le convoquera quand la nécessité se présentera.

M. Jonsgaard donne ensuite un compte-rendu sur les recherches récentes sur la baleine "Minke", petite espèce qui a acquis récemment une importance économique et le Comité a été frappé par la valeur du travail décrit. Il estime qu'une réunion ultérieure pourrait être tenue, par exemple pour écouter et discuter des progrès dans ces nouveaux champs de recherches.

II. Recommandation.

Que les réunions régulières du Comité de la Baleine soient suspendues mais que le Dr. Mackintosh soit invité pour agir comme Président ou "Convener" de toutes réunions futures qui apparaîtraient désirables dans le but de discuter des questions en rapport avec les baleines et l'industrie baleinière.

Réunion sur les Crustacés et Mollusques.

Sous la Présidence de M. le Docteur Havinga

Recommandation.

1) Qu'une organisation permanente, sous forme d'un Comité ou d'un Sous-Comité, soit établie pour organiser et provoquer des réunions traitant des crustacés, mollusques et cultures marines[1]).

2) Que, si le Conseil accepte la Recommandation(1) le Dr. Havinga en soit le Président.

3) Qu'une réunion spéciale sur les cultures marines se tienne en 1951, soit avant, soit pendant la réunion plénière[2]).

[1]) Inhérent au plan de réorganisation.

[2]) Pas accepté par le Comité Consultatif.

Comité Statistique.

Président: Dr. Nils Rosén.

I. Compte-rendu.

1) Le *Bulletin Statistique* pour 1945—46 est présenté au Comité.

2) Le Président mentionne que le matériel pour le *Bulletin Statistique* 1947 a été reçu des pays membres et qu'il est à l'impression.

3) Le Président signale que les modèles à remplir pour 1948 ont été envoyés aux pays membres et espère qu'ils lui seront renvoyés avant la fin de l'année.

4) D'accord avec la proposition du Dr. Went, il est décidé d'envoyer les modèles pour 1949 aussitôt que possible.

5) A la suite d'une discussion concernant la comparaison des statistiques publiées par F.A.O. et par le Conseil, le vœu est émis que contact soit pris avec F.A.O. à ce sujet.

6) Le Comité propose que le Dr. Nils Rosén soit réélu Président pour l'année suivante.

RAPPORTS

ET

PROCÈS-VERBAUX DES RÉUNIONS

VOLUME CXXIX

2ÈME PARTIE

RAPPORT ADMINISTRATIF

(1949)

REPORT

of

ADMINISTRATION FOR THE YEAR ENDING OCTOBER 31st 1950

I. General.

The composition of the Council has remained unchanged during the year under review. The Council has, however, suffered a great loss in the person of its Président d'Honneur, Mr. Henry G. Maurice, who died on 12. May 1950. Then again, just before the opening of the Council Meeting, the death was announced of Dr. R. S. Clark, Chairman of the Consultative Committee, who had served the Council for many years with great distinction.

A new Committee—the Herring Committee—was established in 1949, directly following the Edinburgh meeting, under the Chairmanship of Dr. W. C. Hodgson; it operated for the first time during the Copenhagen meeting.

Meetings of the Bureau attended by all members took place in October 1949 in Edinburgh and in May 1950 in Copenhagen.

II. Work at the Central Office in Copenhagen.

The routine work has been carried out as usual in all departments.

The following publications	were issued	are in preparation
Rapp. et Proc.-Verb., Vols. No.	125 127	128 & 129
Annales Biologiques, Vol.	V	VI
Journal du Conseil, Vol.	XIV, 2 & 3	XVII, 1
Zooplankton Identification Sheets, Nos.	—	18—29
Bulletin Statistique, Vol.	XXXI, 1945/46	XXXII, 1947
Bulletin Hydrograph.	for 1940—46 with appendix	for 1948 & 49

The 1947-issue of the *Bulletin Hydrographique*, reproduced by the photolithographic method, is ready for distribution.

Following a decision of the Bureau, a circular letter has been sent to all institutions of non-member countries named in our distribution lists asking for a revision of the exchange service, and the free distribution list has been considerably curtailed, especially in the case where no publications were received in exchange.

H. Blegvad.

Income and Expenditure Account for the year $^{1}/_{11}$ 1949—$^{31}/_{10}$ 1950.

EXPENDITURE

	D. kr.	D. kr.
I. Incidentals		
1. President	6,000.00	
2. Editor of the Journal	3,000.00	
3. Assistance to Editor of the Journal	1,500.00	
4. Chairman of Consultative Committee	4,000.00	
5. Chairmen and Vice-Chairman of Committees	32,000.00	
6. Editor for Statistics	2,000.00	
7. Editor of Plankton Sheets	1,000.00	
		49,500.00
II. Headquarter Staff		
1. General Secretary	9,534.69	
2. Editorial Assistance	3,000.00	
3. Assistant Secretary (General)	10,514.66	
4. Assistant Secretary (Information)	9,446.66	
5. Statistical Secretary	7,434.69	
6. Clerical Assistant	6.871.33	
7. Clerical Assistance	5,374.66	
		52,176.69
III. Hydrographical Staff		
1. Hydrographer	12,414.66	
2. Clerical Assistance	5,374.66	
3. Assistance	276.00	
4. Card Index work	1,500.00	
		19,565.32
IV. Office Expenses		
1. Rent	5.580,00	
2. Light and Heating	1,130.00	
3. Stationery, books, etc.	2,270.06	
4. Telephone, telegrams, postage	1,563.06	
5. Furniture and fittings	447.70	
6. Insurance	491.76	
7. Upkeep	2,940.95	
8. Miscellaneous	4,389.99	
		18,813.52
V. Travelling Expenses		7,696.35
VI. Printing and Distribution		
1. Printing	55,893.47	
2. Translations etc.	504.23	
3. Distribution	602.30	
		57,000.00
VII. Pensions		4,184.23
VIII. Extraordinary Expenses		2,000.00
IX. Special Plankton Expenditure		15,000.00
X. Extraordinary Cost-of-living Expenditure		5,723.68
		231,659.79

RECEIPTS

	D. kr.	D. kr.
I. Contributions		
France	30,000.00	
Great Britain	30,000.00	
Belgium	10,000.00	
Denmark	15,000.00	
Finland	7,500.00	
Holland	15,000.00	
Iceland	10,000.00	
Ireland	10,000.00	
Norway	15,000.00	
Poland	10,000.00	
Portugal	15,000.00	
Spain	14,985.00	
Sweden	15,000.00	
		197,485.00
Outstanding as per $^{31}/_{10}$ Iceland		5,000.00
II. Interests		
On Bank Deposits	254.39	
On Investments	5,712.00	
		5,966.39
III. Sale of Publications		6,204.12
Excess of Expenditure over Income		17,004.28
		231,659.79

Pension-Fund.

EXPENDITURE	D. kr.	RECEIPTS	D. kr.
Miss Hansted's Pension as per October 31st	5,117.41	Balance as per November 1st 1949	109,777.64
Extraordinary cost-of-living bonus	381.50	Interests on bank deposits	60.59
Balance as per $^{31}/_{10}$ 1950	108,854.82	on investments	4,515.50
			4,576.09
	114,353.73		114,353.75

Balance Sheet October 31st 1950.

LIABILITIES	D. kr.	D. kr.	ASSETS	D. kr.	D. kr.
Capital Reserve:			Cash at Handelsbanken	2,834.84	
Balance as per November 1st 1949			Cash at Sparekassen	40.26	
Capital Account 54,139.18			Cash at Postgiro	29.14	
Special Suspense Account 50,485.00			Cash in hand	442.05	
	104,624.18				3,346.29
Less Excess of Expenditure over Income	17,004.28		Danish Treasury Bonds (nominal value 138,000.00) at cost		136,030.99
		87,619.90	(Market value on Oct. 31st 1950: Kr. 123,085.50)		
Pension Fund		108,854.82	Pension Fund:		
			Cash at bankers	2,162.41	
Creditors: Contributions for 1950/51:			Danish Treasury Bonds (nominal value 109,000) at cost	106,692.41	
Sweden 15,000.00			(Market value on Oct. 31st 1950: Kr. 96,818.00)		108,854.82
Denmark 15,000·00					
Holland 15,000.00			Debtors:		
Sundry Creditors 17,990.38			Balance of Contributions:		
		62,990.38	France (for 1948/49)	6,233.00	
			Iceland (for 1949/50)	5,000.00	
					11,233.00
		259,465.10			259,465.10

H. Blegvad

/ E. Brønniche

I have compared the above Balance Sheet with the Books and Vouchers of the Council, and certify that it is in accordance therewith. I have verified the existence of the cash on hand and at bankers as well as of the Treasury Bonds.

Copenhagen, 5. December 1950.

(sign.) Karl Sørensen,
State-Certified Auditor.

We have scrutinized the foregoing Accounts and Balance Sheet and are satisfied that they are correct.

K. A. Andersson, Å. Vedel Tåning,

E. Leloup, Gunnar Granqvist, Gunnar Rollefsen.

Reports of Area Committees.

NORTH-EASTERN AREA COMMITTEE

1949

By

GUNNAR ROLLEFSEN

England.

(R. S. WIMPENNY.)

THE "Ernest Holt" was commissioned in January and nine cruises were made to the Barents Sea.

Two hydrographic sections were established for the collection of temperature observations, salinity, oxygen, nutrients and plankton samples, from standard depths. The lines were (a) Loppen to Bear Island, and (b) from Bear Island westwards along the 74° 25′ N. parallel to 13°00′. These were carried out on three cruises during the year.

Observations of bottom temperature were made over a wide area in the Bear Island and Hope Island region, in relation to the great gatherings of growing cod in concentrations that will yield a ton and a half and more an hour's trawling. The cod in these great gatherings are usually idle, so far as we can tell, but in a short season of a couple of months concentrations can be found feeding. Dispersed fish can be found feeding in many other months. Cod were found feeding in very cold water, less than zero Centigrade.

Generally the idle mobs did not occur in water of less than 2° C. on the seabed, and, in our experience, never in less than $1^1/_2$°, but paying concentrations were not necessarily found when the temperature at the bed of the sea was favourable. There is evidently more than mere temperature governing their occurrence.

Cod otoliths, principally from immature fish, were studied, in order to investigate races within the Arcto-Norwegian stock. A more extensive population survey was begun late in the year, based on market sampling, and a fin-ray technique for age determination.

A benthos survey of the Bear Island shelf was initiated, incidental to the trawling programme.

The 110 mm. codend mesh, recommended by the 1946 Convention, was operated successfully, and adopted for regular use.

Collections of fish-slime smears and flesh samples were undertaken for D.S.I.R., Aberdeen, and "quick-frozen" fish brought back for fish-quality tests.

France.

(P. DESBROSSES.)

En Mer de Norvège, le navire océanographique "Président Théodore Tissier" a travaillé depuis le sud de la Fosse Norvégienne jusqu'à la latitude de Bergen du 19 au 25 Septembre.

Aux stations hydrographiques nos. 302 à 305 des températures et 20 échantillons d'eau ont été prélevés à diverses profondeurs (à 0 m.; 25 m.; 50 m.; 100 m.; 200 m.); des pêches planctoniques ont été faites en surface; des échantillons de fond ont été dragués par 300 mètres.

D'autre part, l'aviso "Ailette" de la Marine Nationale, a effectué le 6 Juillet une station hydrologique au large de Bergen avec pêche planctonique de surface.

Norway.

(G. ROLLEFSEN.)

Hydrography.

See Hydrographical Committee.

Plankton.

During the year plankton hauls were made at fixed stations, Skrova and Eggum in the Lofoten area, every fortnight. At Ona and Sognesjøen on the western coast of Norway similar investigations were initiated.

In March, April, May, and June samples were taken in the Vestfjord, outside Lofoten, and on the Vesterålen, Troms and Finnmark coast, mainly using a Clarke-Bumpus sampler, but a Nansen net 8/72 was also used on some stations.

Samples were also collected during the herring cruise in the Norwegian Sea, June to September.

Biology.

Cod. The routine investigations of cod have been continued on a similar scale as the previous year. Due to smaller landings during the Lofoten fishery, the field workers experienced, in some places, some difficulties in collecting the material.

From the Lofoten area measurements of appr. 37000, and age determinations of appr. 10000 individuals were carried out, about 350 being examined as to number of vertebrae. In the Senja area about 4000 cod were measured, the age of 800 of these being determined.

Otoliths were collected on a cruise in the Bear Island and Spitzbergen waters during May/June.

This year material was also obtained from the Finnmark coast in order to get a better knowledge of the "lodde-torsk", the immature fish of the Arcto-Norwegian stock of cod. From this area measurements of about 5200 and age-determinations of about 3000 cod were carried out.

Tagging experiments on cod to elucidate the migrations of the fish and, if possible, also estimate the mortality due to fishing, were carried out during the winter 1949 on the Lofoten banks. 1969 specimens were marked, partly with the hydrostatic tags constructed by Lea, partly with ebonite and plastic discs.

Haddock.

The work on haddock was continued during the year.

Herring.

See Herring Committee.

Other Investigations.

From 5th September to 11th November m/c "Johan Hjort" worked in northern Norway. The occurrence of the 0-group of cod, haddock and coalfish was studied. The material collected during the cruise has been examined as to number of vertebrae.

Scotland.

(C. F. Lucas.)

Hydrographic and plankton sampling was carried out by the Department's research vessels in January and June 1949. In January, sampling was restricted to the Lindesnes area, whilst in June it extended over the Norwegian deeps from the latitude of Egersund to as far north as 61° N.

Results of the sampling will appear in the reports presented to the Hydrographic and Plankton Committees, and in the *Annales Biologiques.*

Publications 1949.

Rep. Norw. Fish. and Mar. Invest., Vol. 9, No. 8. 1949.

Wiborg, Kristian Fredrik: The Food of Cod (*Gadus callarias* L.) of the 0—II-Group from deep Water in some Fjords of Northern Norway. With one Appendix: *Oothrix borealis* n. sp., a bottom-dwelling Copepod from Northern Norway.

Dannevig, Gunnar: Merking av torsk i Lofoten 1947—49. Foreløpig beretning III. Særtr. af "Fiskets gang". Fiskeridirekt. småskr. nr. 1, 1949.

NORTH-WESTERN AREA COMMITTEE

1949

By

Å. Vedel Tåning

The following vessels have operated in the area during the year: R/S "Adolf Jensen", Denmark, Royal Danish Inspection Vessel "Hejmdal", Denmark; Ocean Weather Ship I (60° N. 20° W.), England; Fregate "Aventure", France; M/S "Kári", Iceland; M/S "Vardholm", Norway; R/S "Scotia", Scotland, R/S "Explorer", Scotland.

Denmark.

(Å. Vedel Tåning.)

During 1949 the R/S "Adolf Jensen" carried out work in West Greenland waters where inspection vessels of the Royal Danish Navy also did some hydrographic work, which is dealt with in *Annales Biologiques*, VI, 1949. The research vessel "Dana" was not in commission during the year.

Faroes.

Material for age assessment of **cod** from commercial landings was secured. Otoliths and measurements of **halibut** were obtained, not only from the banks round the islands but also from Faroe Bank and Bill Bailey's Bank.

Greenland (Paul M. Hansen).

The winter 1948—49 was extremely cold and only little research work was carried out with the R/S "Adolf Jensen" during the winter. From the middle of April it was possible to do some hydrographical work and make some trawling experiments in the Godthåb Fjord. In the summer the vessel operated in North Greenland mostly in the Disko Bay area and the Umanak Fjord. Some work was also done in the Upernavik district. In the Julianehåb district (South Greenland) a small motor-boat operated.

Cod. With the small eel-seine great catches were made of small cod belonging to the year-class 1947. This year-class occurred in very great shoals along the coast as far as Umanak, and some specimens were also taken in the southern Upernavik district. Judging from the mass occurrence and the wide distribution of these small cod the year-class 1947 is considered to be one of the richest year-classes which have been found in Greenland waters.

Between two and three thousand otoliths collected at different fisheries stations were examined. The age-analyses show that the old year-classes 1934 and 1936 predominated in North Greenland waters, while the year-class 1942 was the richest at South Greenland. Also the year-class 1945 seemed to be rich, but owing to its young age it was of no significance in the fishery of 1949.

Marking experiments were carried out in North Greenland and in Julianehåb district. About 1200 cod were marked with the ordinary ebonite mark and about 1100 small cod were marked with Lea's hydrostatic mark, mainly in North Greenland waters.

Deep-sea prawns. By trawling experiments very large, new trawling grounds were found in the Disko Bay and good catches were made. Samples of deep-sea prawns were collected for closer examination.

Greenland shark. 86 Greenland sharks were marked in Umanak and Upernavik districts.

Herring. Samples of herring scales were collected in Julianehåb district.

Eire.

No work carried out in the area.

England.

(Michael Graham.)

Fine international net hauls from 50 metres to the surface were taken from Ocean Weather Ship position I in 60° N. 20° W. The intention was to take these samples weekly, but in practice it was only possible to obtain thirty-five samples owing to the state of the wind and sea.

France.

(P. Desbrosses.)

During fishery inspection work in Newfoundland and Greenland waters the frigate "Aventure" of the French Navy carried out hydrographical observations (temperature observations and water-sampling) and operated plankton nets during the cruise, viz. at the Great Bank, Newfoundland, during April—May, off the west coast of Greenland during August—September. A total of 60 stations were operated.

Several observations on the cod fishery were also carried out on board the French trawlers.

Holland.

No work was carried out in the area during 1949.

Iceland.

(Árni Friðriksson.)

Work at Sea. A fishing boat (motor vessel "Kári" V.E. 47, 67 feet) was chartered for marine investigations for the period 10. July—22. September. Two cruises were made. The first one started from Reykjavík. Hydrographical and plankton sections were made all round Iceland as shown in Figure 1 and from Iceland to Jan Mayen. This cruise lasted from 10. July to 15. August. During the second cruise plankton and hydrographical stations were taken as shown on the map Fig. 2. After 15. August trawling experiments were carried out and 1550 cod were marked.

Cod. During the year 16,750 cod were measured and 4750 otoliths collected and examined mostly during the winter fishing season. In addition to these 3846 measurements and 1504 otoliths were collected on board "Kári". Thus the total number of measured cod comes to 20,596 and the number of age-determinations to 6254.

During September 1550 cod were marked off the W. and N. coasts. The following table gives the dates and localities of markings and the serial numbers of marks:

Position	Date	Serial numbers
66°12′—16°30′	1.9.	2602—2767
66°03′—18°20′	3.9.	2768—2993
66°17′—18°20′	6.9.	2994—3073
65°56′—19°33′	7.9.	3074—3171
65°42′—20°36′	8.9.	3172—3400 3451—3600 3651—3850
66°02′—23°28′	12.9.	3851—3950
65°47′—23°53′	13.9.	3401—3450 3601—3650 3951—4060
64°57′—24°00′	15.9.	4062—4108
64°04′—22°31′	15.9.	4109—4150

Other fish. The ages of 602 haddock caught during the cruises were determined by means of the otoliths and about 1200 haddock were measured. Further otoliths and measurements were taken from several other species.

Hydrography. (See the maps, Figs. 1 and 2.) Hydrographic investigations were made at 190 stations. A total of 1467 temperature and 1438 salinity determinations were made. 500 drift-bottles were liberated in several localities off the northwest coast, north coast and between Iceland and Jan Mayen.

Plankton. Over 80 stramin-net (S 200) samples were taken and about 190 with Hensen net.

Bottom samples. Samples were collected in Þistilfjörður on the north coast, in Eiðisvík south of Langanes, at Jan Mayen and in Faxa Bay, a total of 25 samples.

Norway.

(Finn Devold.)

A cruise to Iceland and Greenland with the chartered Norwegian fishing vessel "Vardholm" was carried out from 2. July to 23. August 1949.

Hydrographic sections, fishing and other operations were carried out. Several details from the hydrographic work on the ice conditions and on the cod-investigations are given in Ann. Biolog., VI, for 1949, by Mr. Birger Rasmussen.

Scotland.

(Bennett B. Rae).

During 1949 six cruises were carried out in the North-Western Area as follows:—

1. February—March ("Scotia") proceeding from Butt of Lewis to Faroe Bank, thence around the islands and north from Enniberg to 63°30′ N., returning from Nolsø to Flugga.
2. April—May ("Explorer") proceeding from Flugga to Nolsø north from Enniberg to 63° N. along the eastern side of the islands and returning from Syderø to Fair Isle.
3. April—May ("Scotia") proceeding from Butt of Lewis to Faroe Bank thence to south Iceland including Faxa Bay and returning via Lousy Bank and Rosemary Bank to Sound of Harris.
4. July ("Scotia") proceeding from Firth of Clyde to Rockall Bank, Lousy Bank, Bill Bailey's Bank, Faroe Bank and Syderø, thence around the islands and north from Enniberg to 63°30′ N., returning from Syderø to Sule Skerry.
5. August—September ("Scotia") proceeding from Butt of Lewis to Faroe Bank and beyond to 62°45′ N. 10° W., north to 63°18′ N. and around the islands, returning from Nolsø to Flugga.
6. November ("Scotia") proceeding from Butt of Lewis to Faroe Bank and returning from Nolsø to Flugga.

Hydrographical, planctonic and trawling surveys were carried out on each of these cruises with varying emphasis according to the time of year and the grounds covered.

In addition to the usual temperature and salinity

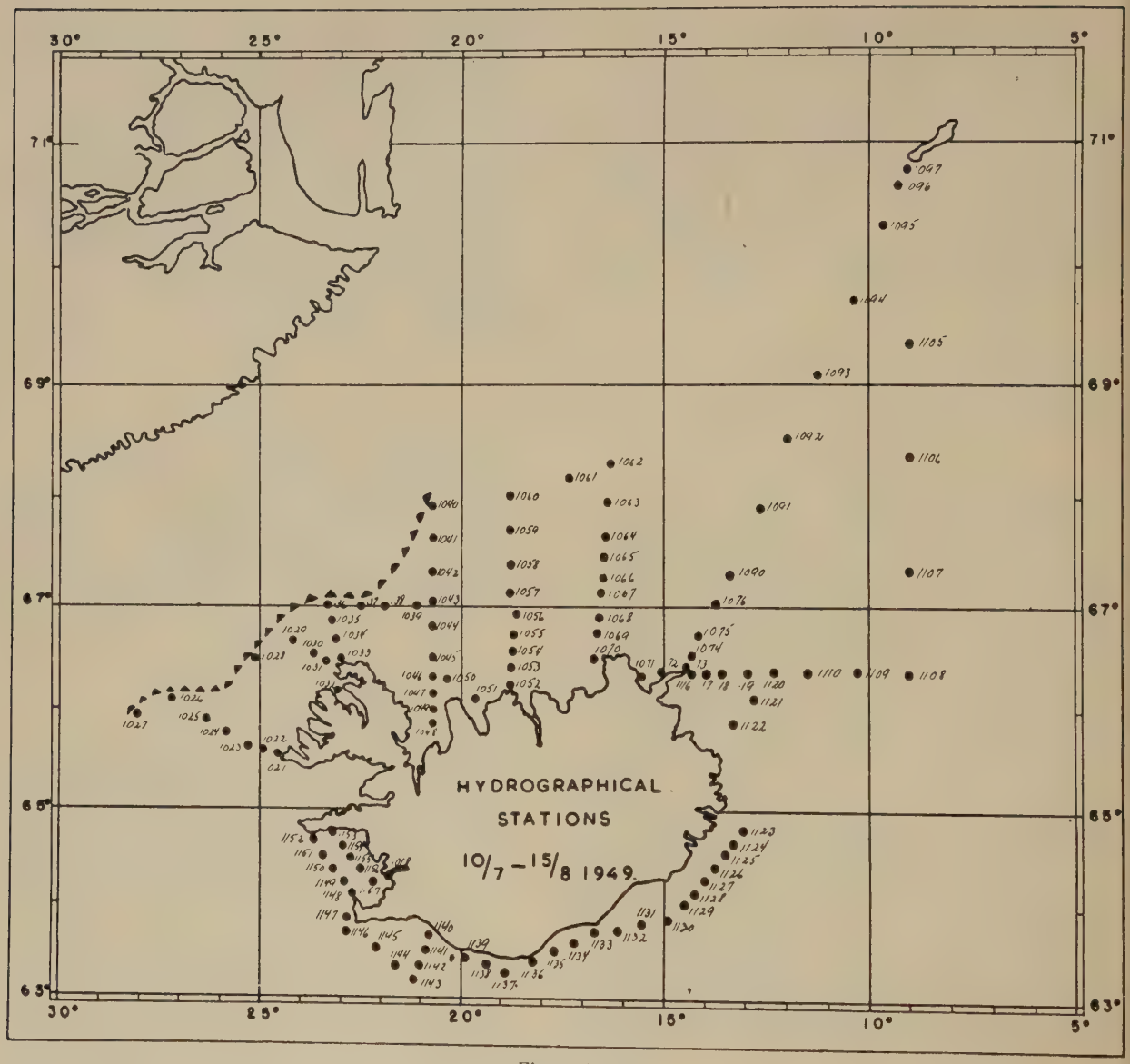

Figure 1.

observations, considerable attention was given to oxygen and phosphate analyses.

Vertical Hensen and Standard nets were used throughout the year in plankton investigations and one metre tow-nets were employed for horizontal sampling. Additional hauls by means of a one-metre silk net were made obliquely from surface to sea bottom at certain deep-water stations.

Whilst the major part of the Continuous Plankton Recorder programme continued as usual (see Northern North Sea report), it was not possible for the Pentland Firth-Iceland records to be obtained in 1949. It is expected that they will be available again in 1950.

Trawling was carried out at all the regular stations round the Faroes and, on the third cruise, a limited number of hauls was made along the south coast of Iceland and in Faxa Bay. On the fourth cruise, trawling was also carried out on Rockall, Bill Bailey's and Faroe Banks. This work initiated a detailed programme of work in the haddock stocks of the area for which extensive sampling on the markets will also be done.

During the year samples of lemon sole scales with measurements were obtained from 36 commercial catches landed at Aberdeen fish market from Faroese grounds and from 8 catches from Icelandic grounds.

Figure 2.

Through the kindness of the skippers and crews of certain Aberdeen long liners samples of halibut stomachs have been procured throughout the year from north-western grounds and one trip on a liner to west Iceland was made by a member of the laboratory staff.

The results of some of these investigations are discussed in the *Annales Biologiques* VI, 1949.

Sweden.

No work was carried out in the area.

Bibliography.

Fraser, J. H.: The Occurrence of Unusual Species of Chaetognatha in Scottish Plankton Collections. Journ. Mar. Biol. Assoc., N. S., XXVIII, 489—491.

The Distribution of Thaliacea (Salps and Doliolids) in Scottish Waters, 1920—1939. Scient. Invest., Fish. Div., Scottish Home Department, 1949, No. 1.

Rae, B. B.: Review of the Scottish Lemon Sole Fishery at Faroe with Special Reference to the Years 1933 to 1938. Journ. du Cons., Vol. XV, 1, 1947.

Lemon Soles at Iceland 1924—1939 with Special Reference to Faxa Bay. Journ. du. Cons., Vol. XV, 3, 1948.

†Sæmundsson, Bjarni: Fishes (in "Zoology of Iceland"). 1949.

COMITÉ ATLANTIQUE

1949

Par

JEAN LE GALL

DÈS leur première année d'existence, les trois Sous-Comités du Comité Atlantique ont manifesté une telle vitalité que l'activité de chacun de ces secteurs géographiques:

Plateau Continental Européen,
Plateau Continental Africain,
Méditerranée Occidentale,

peut avoir désormais son autonomie propre que l'on retrouvera dans les "Rapports Administratifs" de ces trois Sous-Comités.

Dans ces conditions, le Rapport Administratif du Comité Atlantique relatera uniquement les travaux et recherches entrepris en Atlantique, au large de la Plateforme Continentale de l'Atlantique nord-est, et, principalement, les travaux effectués en collaboration étroite par les trois Sous-Comités sur la biologie des thonidés et des clupéidés (hareng excepté).

I. Hydrologie.

Eire.

Pas de croisière océanographique. Relevé des températures de surface à bord du bateau-feu "Conigsbeg".

France.

Observations océanographiques habituelles à bord des garde-pêche "Ailette" en Mer Celtique; "Aventure" sur les bancs de Terre-Neuve et du Groënland.

Campagne du "Président Théodore Tissier" en Manche, en Atlantique, en Méditerranée et en Mer du Nord.

Les Rapports Administratifs des Comités du Secteur du Comité Atlantique font état de ces travaux à la mer.

Grande-Bretagne.

Le navire "Explorer" du Scottish Home Department a fait des observations hydrologiques et des pêches de plancton de l'Ecosse jusqu'au nord de l'Irlande en Mai et Juin 1949. Il a étudié en même temps le stock de poissons à l'ouest des Iles Britanniques.

Le "Scotia" a fait en Juillet et Août 1949 une croisière sur les lieux de pêche de l'Atlantique au large de l'Ecosse.

Les résultats de ces recherches seront publiés dans les *Annales Biologiques*, Vol. 6.

Courants. Les dispositions ont été prises par le laboratoire maritime du Scottish Marine Biological Association à Millport pour que des bouteilles dérivantes soient lancées à la mer à bord des frégates météorologiques.

II. Plancton.

Grande-Bretagne.

Depuis 1949, le Département d'Océanographie de l'University College à Hull poursuit ses recherches sur le plancton de la région par des observations continues (Plankton Records) à trois semaines d'intervalle environ, entre la côte nord d'Irlande et les Stations "I" et "J" occupées par les frégates météorologiques Britanniques.

Les résultats obtenus ont été mentionnés dans les *Annales Biologiques*, Vol. 6.

La Station de Biologie Marine à Millport reçoit les échantillons des frégates météorologiques Britanniques et les adresse au Dr. BRAARUD à Oslo pour étude.

France.

Les échantillons de plancton collectés par les frégates météorologiques Françaises à la station "L" puis à la station "K" ont été examinés à l'Office Scientifique et Technique des Pêches Maritimes à Paris.

III. Biologie.

Gadidés (Morue).

Les observations hydrologiques et biologiques faites sur les Bancs de Terre-Neuve et du Groënland sont régulièrement collectées pour leur étude ultérieure en liaison avec les fluctuations de la pêche.

Clupéidés (Hareng excepté).

Les travaux effectués sur la biologie de la sardine, du sprat, de l'anchois, sont exposés dans les Rapports Administratifs des trois Sous-Comités de secteur du Comité Atlantique.

Des observations sur le sprat ont été poursuivies dans plusieurs ports de pêche le long de la côte d'Irlande. Le matériel est à l'étude.

Une prospection plus étendue de la composition des concentrations de pilchards sur la côte de Cornouailles Anglaise a fait suite, en 1949, aux recherches commencées en 1947.

900 poissons ont été examinés au point de vue taille et maturité. 891 écailles étudiées pour déterminer l'âge des poissons, 594 colonnes vertébrales dénombrées pour l'établissement de la moyenne vertébrale. En outre, l'étude de la croissance a été faite sur 238 écailles de pilchards de quatre ans et sur 181 écailles de pilchards de sept ans.

Au laboratoire de Boulogne s/Mer, un échantillonnage de "célans" a été étudié en détail.

Le navire de recherches "Sir Lancelot" a fait en Juin et Septembre, deux croisières en Manche dans le but de découvrir la position des principales frayères de l'espèce.

Le "sondage par écho" a été continuellement employé au cours de ces croisières et des œufs de sardines collectés à des stations faites à intervalle de quinze milles.

Les résultats de ces recherches ont été exposés dans "The Experiments on the Cornish Pilchard Fishery in 1947—48", by W. C. Hodgson and I. D. Richardson, Min. Agric. and Fish., Fish. Invest., Ser. II. Vol. XVII N° 2. London 1949.

Thonidés.

Les comptes-rendus des Réunions des Experts du Conseil International pour l'Exploration de la Mer à Málaga (Mai 1949) et à Tunis (Juillet 1949) consacrées à l'étude de la biologie et du comportement des thonidés, ont donné lieu à des rapports spéciaux.

Les résultats des recherches entreprises sur la biologie et les déplacements des thonidés sont exposés dans les Rapports Administratifs des Sous-Comités du Comité Atlantique.

Sous-Comité du Plateau Continental Européen.

1949

Par F. Navarro

I. Travaux à la Mer.

Hydrologie.

Belgique.
Danemark.
Eire.
Portugal.

Pas d'observations hydrologiques dans le secteur pendant l'année 1949.

Espagne.

De la fin Août à mi-Octobre 1949, le navire "Xauen" a procédé à l'étude hydrologique des eaux de la côte ouest de Galice; de nombreuses pêches de plancton, des sondages, des analyses de salinité, d'oxygène et des phosphates ont été effectués. Résultats négatifs en ce qui concerne la présence d'œufs et de larves de sardine.

Du 19 au 22 Août, plusieurs stations hydrologiques ont été faites par le "Xauen" le long des côtes Portugaises.

France.

Les observations hydrologiques ont été poursuivies en Manche, en Mer Celtique, dans le Golfe de Gascogne et à l'ouest de la Péninsule Ibérique.

L'aviso "Ailette" de la Marine Nationale, a travaillé en Avril 1949 en Manche occidentale faisant une section du Cap de la Hague à Start Point, en Mer d'Irlande (cinq stations), ainsi qu'en Mer Celtique, effectuant cinq stations entre le 46° L. N. et le 51° L. N.

La frégate "Aventure", de la Marine Nationale, chargée de la surveillance et de la protection des pêches à Terre-Neuve et au Groënland, a continué ses observations hydrologiques suivant le programme habituel.

Les frégates météorologiques "Laplace", "Le Brix" et "Mermoz" sont maintenant basées sur le point "K" (45° N.—16° W. Gr.). Elles ont effectué de nombreux prélèvements d'eau et relevés de températures, sur leur trajet de Brest au point "K" et retour. Les observations ont été faites jusqu'à 400 mètres de profondeur à la station fixe "K".

Le navire océanographique "Président Théodore Tissier" a effectué une campagne de six mois en 1949: de 2 Mai au 30 Octobre, explorant un vaste secteur s'étendant depuis Bergen et Aberdeen au nord, au Détroit de Gibraltar au sud et en Méditerranée depuis Málaga et Port-Vendres jusqu'à Alger et Tunis.

Au cours de la campagne, ont été effectués 375 stations hydrologiques avec 1200 relevés de température et 940 prélèvements d'échantillons d'eau; ces opérations hydrologiques ont été complétées par des pêches de plancton (328), des dragages pour l'étude des sédiments (200) et des essais de pêche de poissons, mollusques et crustacés comestibles.

Des navires de pêche, opérant en Manche, en Mer Celtique et dans le Golfe de Gascogne, ont embarqué les biologistes de l'Office Scientifique et Technique des Pêches Maritimes vers les pêcheries de sardines, de merlus et de crustacés.

II. Plancton.

Le Service du Plancton de l'Office Scientifique et Technique des Pêches Maritimes a trié et classé une grande partie du plancton récolté au cours de l'année.

Melle Fleury a étudié le plancton pêché sur le Grand Banc de Terre-Neuve, en relation avec les conditions hydrologiques.

Le même laboratoire a étudié les contenus stomacaux de poissons comestibles d'origines diverses, en liaison avec le plancton.

Le plancton récolté par le "Président Théodore Tissier" en 1946, en Manche et sur le Plateau Continental Celte, a fait l'objet d'une étude de Melles Fleury et Fortin portant spécialement sur les copépodes et les diatomées.

Une étude sur la répartition de plusieurs Candaciides est en cours.

Le plancton récolté en divers parages du Portugal, notamment en Saö Martinho do Porto et en Cascais, a fait l'objet des études de Melle Silva et M. Pinto, portant spécialement sur les diatomées et les dinoflagellés. Les résultats préliminaires ont été déjà publiés.

L'étude des variations saisonnières de l'hydrologie et du plancton de la lacune d'Obidos (côte de Portugal, par 39°23′ N. env.) a été entreprise.

III. Sédiments Marins.

L'étude des sédiments provenant de la campagne du "Xauen" en Galice a été entreprise par les spécialistes Espagnols.

IV. Biologie.

Clupéidés.

Les recherches sur la sardine, le sprat et l'anchois ont été poursuivies sur les côtes Atlantiques d'Espagne. Divers rapports sur ce sujet ont été publiés en 1949, et d'autres sont sous presse.

Des pêches exceptionnelles de Janvier à Mars 1949 entre Quiberon et Belle-Ile, ont conduit M. Faure à des recherches sur place. Les conditions du milieu sur les lieux de pêche et l'ichthyométrie des sardines ont été étudiées.

L'âge et la moyenne vertébrale de sardines pêchées près de La Rochelle et de Concarneau en Juin, Septembre et Octobre, ont été déterminés par MM. Letaconnoux et Priol.

Une note sur la sardine du Golfe de Gascogne a été publiée par M. Letaconnoux dans la *Revue des Travaux de l'Office des Pêches*, Tome XIV.

Une importante contribution à la biologie du sprat du fond du Golfe de Gascogne et des côtes de Provence; tailles, croissance, reproduction, proportions du corps, a été publiée par M. Furnestin dans la même "Revue".

La récolte et l'étude biométrique d'échantillons de sardines ont été poursuivies en Portugal pendant la première moitié de 1949 par M. Ramalho et ses collaborateurs. Les données acquises seront publiées dans les *Annales Biologiques*. On a étudié aussi le contenu stomacal des sardines, spécialement en ce qui concerne le phytoplancton.

Scombridés et Thonidés.

Le thon rouge, le germon, la bonite à ventre rayé et la melva des côtes nord et nord-ouest d'Espagne font l'objet de publications sous presse de MM. Navaz et F. Lozano. D'autres notes et rapports ont été présentés aux Conférences du Thon de Málaga et de Tunis par les spécialistes Espagnols.

L'étude du stock de maquereau a été continuée à la côte sud de Bretagne de Belle-Ile à Concarneau. Une note à ce sujet a été publiée dans les Ann. Biol. (Vol. VI) par M. Le Gall qui précise ses conclusions sur la croissance de l'espèce.

Aux deux conférences internationales sur les thonidés qui se sont tenues à Málaga en Mai 1949 et à Tunis en Juillet 1949, M. Le Gall a présenté des études sur les migrations et la croissance du germon, *Germo alalunga*. M. Letaconnoux a exposé une "nouvelle hypothèse pour la biologie du germon".

M. Priol a mesuré 16,000 exemplaires de la même espèce au port de pêche de Concarneau; ces mensurations indiquent des classes annuelles nettement séparées et confirment la validité de la courbe de croissance présentée par M. Le Gall à la conférence de Málaga.

Les bonites à ventre rayé *Katsuwonus pelamis* ont été plus abondantes au large des côtes Françaises que les années précédentes; 200 exemplaires ont été mesurés.

M. le Prof. Frade (Portugal) poursuit l'établissement du rapport sur le "patudo", *Parathunnus obesus* dont il a été chargé aux conférences internationales sur les thons.

Un recueil d'informations concernant les navires Portugais dédiés d'habitude ou éventuellement à la pêche des thons, des bonites et des autres scombridés, a été entrepris.

Carangidés.

Une étude monographique de M. F. Lozano sur le chinchard de Galice (Espagne) est en cours d'impression.

Gadidés.

Une étude sur le merlan, *Gadus merlangus* L. de la côte Française de l'Atlantique a paru sous la signature de M. Desbrosses dans la *Revue des Travaux de l'Office des Pêches*, Tome XIV.

Les observations sur la diminution du stock de merlu *Merlucius merluccius* en 1948, ont été publiées dans les Ann. Biol. (Vol. V). En 1949, après mensurations de 2,000 exemplaires et détermination de l'âge de 250 merlus, M. Letaconnoux constate une diminution importante des classes âgées, qui ne peut être due qu'à une pêche exagérée.

Pleuronectidés.

La sole ordinaire, *Solea solea* L. a été étudiée sur les côtes de Bretagne par M. Desbrosses, au point de vue de la taille, de l'âge, formule vertébrale, première maturité sexuelle.

Le stock de la cardine, *Lepidorhombus megastoma* Donov. est en déplétion depuis 1946: d'après M. Letaconnoux, une nette diminution de la taille moyenne est observée.

Mollusques et Crustacés.

Un travail de M. Amengual sur la biocénose des gîsements de mollusques en général et l'étude particulière de ceux de la Ria de Noya (Galice; Espagne) est paru dans le *Bulletin de l'Institut Espagnol d'Océanographie*. Une note de M. Andreu sur deux trématodes parasites du *Tapes aureus* a été publiée dans ce bulletin.

MM. Faure et Poisson ont étudié en France l'action du chalut à crevettes sur les jeunes poissons, ainsi que le stock de *Crangon vulgaris*.

Des échantillons de *Pecten maximus* ont été prélevés pour l'étude de l'âge de la croissance et du développement sexuel dans la Baie de Bantry et à Connemara dans le Comté de Galway (Eire).

Des observations régulières sur la taille, l'âge, la première maturité sexuelle de la coquille Saint-Jacques, *Pecten maximus* L., ont conduit M. Le Gall à conclure qu'il y a en rade de Brest une population autochtone dont la biologie est à l'étude. Les espèces voisines *Chlamys varia* L. et *Chlamys opercularis* L. font également l'objet de recherches suivies.

Une étude sur la propagation le long des côtes Françaises du clam, *Venus mercenaria*, mollusque bivalve importé des U. S. A. a été entreprise.

Avant et pendant la reproduction des huîtres *Ostrea edulis* L. des prélèvements de plancton et de naissain ont été effectués en divers points de la côte Française par M. Lambert et ses collaborateurs. Des expériences d'engraissement et de verdissement des huîtres par l'addition d'engrais sur les claires ont été continuées avec succès en 1949. D'autre part, les maladies de l'huître et les moyens de lutte contre ses ennemis ont fait l'objet de recherches suivies du personnel de l'Office des Pêches.

En Eire et en Grande Bretagne, la reconstitution des gisements d'huîtres est entreprise par l'importation de naissain étranger. Le développement de ce naissain est attentivement suivi.

Une étude biologique du *Tapes decussatus* de la Ria de Faro (côte sud du Portugal) portant spécialement sur la reproduction, est en cours de publication sous la signature de M. Vilela.

Algues Marines.

L'étude méthodique des variations de la composition chimique des algues marines du nord et du nord-ouest d'Espagne s'est poursuivie dans les laboratoires de l'Institut Océanographique.

En France, des recherches sur des phénomènes de pollution constatés et la floculation des alginates dans l'eau de mer ont été poursuivies par le Prof. Le Gall, aux laboratoires de Banyuls et de Roscoff.

Divers.

Des recherches expérimentales sur le "fouling" et la corrosion des métaux par l'eau de mer ont été continuées en Espagne.

La plupart des espèces comestibles importantes capturées à bord des chalutiers et du navire "Président Théodore Tissier" ont été mesurées: morues, églefins ou haddocks, plies, limandes, trigles ou grondins, rougets-barbets, etc.

Sous-Comité de la Méditerranée Occidentale.

1949

Par H. Heldt.

I. Travaux à la Mer.

Hydrologie.

Algérie.

Le Professeur Bernard a continué les mesures de salinités et de températures au large d'Alger jusqu'aux profondeurs de 1,000 mètres, ainsi que les dosages de phosphates et nitrates.

Espagne.

En Janvier—Février 1949, le "Xauen" a effectué deux croisières en Mer d'Alboran et dans le Détroit de Gibraltar, en poursuivant le plan de travaux des précédentes années.

En Juillet—Août, le "Xauen" a fait des observations de températures et de salinités de surface sur les trajets Baléares—Tunis—Málaga.

France.

Croisière du "Président Théodore Tissier". De nombreuses observations hydrologiques avec prélèvements d'échantillons d'eau, prises de températures, sondages à l'U.S. ont été effectués par le navire océanographique de l'Office Scientifique et Technique des Pêches sur les routes Gibraltar—Malaga, Malaga—Alger, Alger-Port—Vendres; Port—Vendres—Tunis; Tunis—Gibraltar.

Le Laboratoire Arago de Banyuls s/Mer a poursuivi les études hydrologiques au cours de plusieurs sorties en mer dans cette région.

Monaco.

Les mesures habituelles de températures et salinités de l'eau de mer de surface dans la région de Monaco, ont été continuées sans interruption.

Plusieurs stations ont été effectuées jusqu'à 1,000 mètres de profondeur par l'"Eider", navire de recherches du Musée.

Les observations de la dépression de l'horizon de la mer, du champ électrique de l'atmosphère et des courants au voisinage de Monaco ont été continuées pendant toute l'année 1949.

Tunisie.

Du 19 Juin au 3 Août 1949, le navire océanographique de l'Office des Pêches "Président Théodore Tissier" mis à la disposition de la Tunisie, effectua une croisière d'études de la frontière Algérienne à la Tripolitaine; 105 stations furent établies. Les fonds du Plateau de la Galite, banc Le Sec, plateau des Esquerquis, furent explorés ainsi que les bancs spongifères situés entre la côte Tunisienne, l'île Lampeduse et la frontière Tripolitaine.

Les escorteurs de la Marine "Le Volontaire", le "Mameluk", "Le Lancier" ont effectué des stations hydrologiques, périodiquement, en des points déterminés. Tous les échantillons prélevés ont été analysés à la Station Océanographique de Salammbô.

Des sorties ont été effectuées par le personnel scientifique de la station de Salammbô à bord de vedettes de la surveillance des côtes dans la région de Sfax, le golfe de Gabès et la mer de Bou-Grara.

Des observations sur les marées ont été notées en différents points des côtes de la Régence.

II. Plancton.

Algérie.

Les pêches de plancton se sont poursuivies régulièrement en baie d'Alger deux fois par mois aux profondeurs de 0, 200, 300 et 400 m. Le Professeur Bernard en a suivi les changements quantitatifs, l'étude de certains groupes étant confiée à des spécialistes. Des études méthodiques ont aussi été poursuivies par plusieurs chercheurs sur le phytoplancton.

Les variations du microplancton en baie d'Alger ont été poursuivies jour par jour, parfois heure par heure.

Espagne.

Les échantillons provenant des croisières Espagnoles ont été étudiés par les spécialistes. Un rapport de MM. Massuti et Navarro sur les copépodes et les tintinnidés de la Mer d'Alboran est à l'impression.

France.

La station maritime d'Endoume, en liaison avec le laboratoire pour l'étude biologique de la Camargue a entrepris des recherches de bactériologie marine, visant principalement à mettre en évidence le rôle des bactéries dans les interactions phytoplancton-zooplancton.

Tunisie.

L'étude des pêches de plancton de la croisière du "Président Théodore Tissier" a été entreprise à la Station Océanographique de Salammbô.

III. Sédiments Marins.

Algérie.

Bernard et Lecal ont fait une étude des sédiments marins dans la région d'Alger. Ces chercheurs ont également commencé l'examen de l'influence des eaux douces sur la fertilité marine, particulièrement pour les crues de l'oued Haarach qui apporte des nitrates et des détritus très au large. Il en résulte un rapport C/N deux à trois fois plus faible que dans les mers ouvertes.

Monaco.

L'analyse d'échantillons de vases recueillies dans les parages de Monaco a fait l'objet d'une publication de MM. Bourcart et Francis-Boeuf publiée au Bulletin de la Station Océanographique de Salammbô.

IV. Études Biologiques des Fonds et Cartes de Pêches.

Algérie.

Le Dr. Dieuzeide a fait l'inventaire des fonds chalutables à Avicules et Alcyonaires des baies d'Alger et de Castiglione et a signalé la présence d'espèces qui n'avaient pas encore été notées sur ces côtes.

Espagne.

Le levé de la carte de pêche du Maroc Méditerranéen s'est poursuivi pendant l'année 1949.

Tunisie.

Les différents faciès caractérisant les principaux fonds de pêche au large des côtes Tunisiennes ont été notés au cours de la croisière du "Président Théodore Tissier".

France.

La station marine d'Endoume a entrepris des recherches faunistiques en vue de dresser une carte

des fonds pour le golfe de Marseille et les régions avoisinantes.

Un fichier faunistique est en cours d'établissement.

V. Biologie.

Clupéidés.

Les mensurations de sardines et sardinelles se sont poursuivies à la Station de Castiglione. De Mai 1948 à Mai 1949, 2,272 sardines et 854 sardinelles ont été examinées.

Les études sur la sardine se sont poursuivies en particulier pour les régions de Málaga, des Baléares et en Mer d'Alboran.

Des mensurations de sardines et sardinelles ont été effectuées à la station de Salammbô et des observations effectuées sur les jeunes sardinelles (*S. aurita* C.V.); l'existence de *S. granigera* a été signalée dans les mers Tunisiennes et l'époque de la ponte de cette espèce a pu être précisée.

Scombridés.

L'étude de la biologie des principales espèces de la famille des Thonidés a fait l'objet des Conférences d'Experts de Málaga (23—28 Mai 1949) et de Tunis (26—30 Juin 1949). Un rapport sur la question a été présenté à la réunion du Conseil à Edimbourg.

Mollusques et Crustacés comestibles.

Le Dr. Dieuzeide a reconnu, dans les eaux Algériennes, en plus d'une espèce nouvelle de *Periclimenes*, un certain nombre de formes qui n'avaient pas encore été signalées dans ces régions.

Une station d'épuration Dodgson pour le traitement des coquillages comestibles fonctionne depuis Décembre 1949 à la Station Océanographique de Salammbô.

VI. Divers.

Une étude systématique des conditions hydrologiques et biologiques dans les étangs du littoral Méditerranéen Français a été entreprise par le laboratoire pour l'étude biologique de La Camargue et des étangs Méditerranéens.

Le Dr. Dieuzeide et M. Novella ont publié un "Essai sur la technique de la conservation par le froid des poissons et autres animaux marins comestibles".

Sous-Comité Atlantique Africain.

1949

Par J. Furnestin

I. Travaux à la Mer.

Hydrologie.

Espagne.

L'exploration bathymétrique de la côte du Sahara Espagnol, de la Pointe Durnford au Cap Barbas a été faite par le "Malaspina" en Janvier 1950.

Maroc.

Des observations trimestrielles ont été poursuivies avec les escorteurs de la Marine Nationale dans la zone du Plateau Continental Marocain et la région du Détroit des Canaries. Température observée à 5, 25, 50, 100, 200 mètres le long de 16 radiales à raison de 4 à 6 stations par radiale.

A.O.F.

Des relevés de température ont été effectués avec le "Gérard Tréca", le long de la côte du Sénégal.

II. Bathymétrie et Sédiments.

Espagne.

Deux travaux de MM. G. de Llarena et G. Colom sur les sédiments et les foraminifères de la côte Saharienne, du Cap Juby au Cap Bojador, sont en cours.

Maroc.

Plusieurs séries de profils du Plateau Continental ont été levées par les escorteurs de la Marine Nationale. Des prélèvements de sédiments ont été effectués au moyen de la drague Petersen.

A.O.F.

L'étude du Plateau Continental du Sénégal (espèces ichthyologiques et nature des fonds) a été faite par le Service Technique des Pêches, avec le chalutier "Gérard-Tréca".

III. Plancton.

Maroc.

Des pêches de surface ont été faites, trimestriellement, dans la zone Marocaine et le Détroit Canarien, en même temps que les observations hydrologiques.

Le zooplancton de ces échantillons est poursuivi à l'Institut Scientifique des Pêches du Maroc.

IV. Cartes de Pêche.

Espagne.

Trois cartes des fonds de pêche des côtes du Sahara (Cap Juby — Cap Bojador — Pointe Durnford — Cap Barbas) sont en cours d'impression.

V. Biologie.

Clupéidés.

L'étude biologique de la sardine et de l'anchois marocains (biométrie, scalimétrie, zones et saisons de reproduction, nourriture) a été poursuivie (Maroc).

Ethmalosa fimbriata a fait l'objet de recherches de la part du Service Technique des Pêches (A.O.F.).

Thonidés.

Les différentes espèces de thons ont été étudiées en Espagne (Canaries), au Maroc et en A.O.F. suivant les prescriptions de la conférence du thon de Málaga.

Autres Espèces.

Recherches sur la biologie du merlu (*Merluccius merlucius*) et des poissons de la famille des sparidés (notamment *Pagellus acarne*) (Maroc).

Description de plusieurs espèces nouvelles sur les côtes du Sénégal (laboratoire de l'I.F.A.N., de Gorée).

Les laboratoires de l'I.F.A.N. et du Service Technique des Pêches continuent à dresser l'inventaire des espèces ichthyologiques de l'Afrique occidentale Française.

Mollusques.

Des essais d'acclimatation d'*Ostrea edulis* et *Gryphea arcuata* ont été amorcés dans une station ostréicole de Casablanca (Maroc).

Algues.

Une carte de répartition des laminaires (*Laminaria flexicaulis* et *Sacchoriza bulbosa*) est en cours d'établissement.

NORTHERN NORTH SEA COMMITTEE

1949

By

C. E. Lucas

Difficulties, ranging from staffing problems to supplies of equipment, continue to prevent the widespread observations within the area which are necessary. Only from Scotland has it been possible, in association with extended surveys in the north-western area, to make observations in the Northern North Sea (mainly on the western side) throughout the year. At the same time, the development of the fishing industries in the various countries interested in the area is undoubtedly influencing the strength of the fish stocks, in several of which there is a tendency to return to the pre-war conditions of over-strain.

Reports on herring work in the area will be found under the heading of the Herring Committee.

Reports.

The following reports have been received from representatives of the countries concerned:—

Denmark.

During 1949 the "Dana" was not in commission for work at sea. As to experimental trawling on herrings on the Fladen Ground carried out by help of the m/c "Sinne Bjerregård" and other herring investigations, see the Herring Committee's report.

France.

Le navire océanographique "Président Théodore Tissier" a effectué du 24 au 26 Septembre, une section hydrologique de Bergen à Aberdeen comportant une dizaine de stations depuis la surface jusqu'auprès du fond (à 0 m., 25 m., 50 m., 100 m. etc. . . .): ainsi que des pêches planctoniques. Ses opérations de chalutage, à l'est de Peterhead, par 95 à 100 m. de fond, ont permis de mesurer 300 gadidés (morues et églefins ou haddocks) 200 Pleuronectes et une centaine de chinchards.

Après son départ de Leith, le 12 et le 13 Octobre, le navire a travaillé entre les latitudes 56°10′ et 56°50′ L. N. jusqu'à la longitude 1° E.G.: effectuant, en plus de l'hydrologie et des pêches planctoniques, 10 opérations de dragages et chalutages, permettant la mensuration de 300 gadidés.

Au total 21 stations, 60 prises d'eau et de température, 12 pêches planctoniques, 11 opérations de dragages et chalutages ont été pratiquées dans le secteur par le "Président Théodore Tissier" du 24 Septembre au 13 Octobre.

L'aviso "Ailette" de la Marine Nationale a effectué dans le même secteur 17 stations hydrologiques en Juillet et en Août, principalement dans la région du "Fladen Ground" et pratiqué en surface des pêches de plancton, actuellement à l'étude.

Norway.

Herring investigations have been continued during the year, the results being reported to the new Herring Committee. At the same time research has been continued in connection with the sprat fisheries, particularly on the vertebral counts of different samples.

Scotland.

The work of the Scottish Home Department's Marine Laboratory at Aberdeen was considerably extended during the year, following the commissioning of F.R.S. "Scotia", so that it became possible not only to maintain fairly regular observations in the Northern North Sea, but at the same time to extend these several times into the waters between Faroe and Shetland. At the same time F.R.S. "Clupea" maintained a regular sampling and tagging of the herring stocks off the north-east coasts of Scotland, from the Firth of Forth to Shetland, whilst F.R.S. "Kathleen" made regular cruises in the inshore waters. Routine cruises in the area covered the greater part of the north and central North Sea, regular observations being made upon the stocks of haddock, lemon sole, whiting and plaice, together with the relevant hydrographic and plankton surveys. The Department's vessels also took part in the special international surveys of May and September.

Investigations of fishing methods were continued during the year, including a survey of the influence of the greatly expanded seine-net fishery upon the stocks of the inshore and the nearer offshore waters, as well as comparative trawling experiments and direct observations on trawls in action using the echometer.

A survey of the lobster stocks along the north-east coast of Scotland has been begun, in relation to those of the north and west coasts.

The Department of Oceanography, University College, Hull, continued their plankton survey as in previous years, monthly samples being collected with the Continuous Plankton Recorder on various steamship routes traversing the area. (See report to the Plankton Committee.)

The investigation into the herring/Calanus interrelationship was continued; during the Scottish summer herring fishery samples were collected each night with Plankton Indicators for comparison with the herring catches in the immediate vicinity, and herring stomach contents were analysed for comparison with the plankton caught on the Indicator discs.

Sweden.

Trawling experiments and investigation of ling in the north-eastern part of the North Sea and off Shetland Island (July).

Tagging experiments of herring on Fladen Ground (August).

Cruises planned for 1950: Ling investigations in the North Sea and off Shetland Island (July).

Tagging experiments of herring.

General.

Only the following publications (other than those in the Council's series) have been reported during the year:—

Fraser, J. H.: The Occurrence of Unusual Species of Chaetognatha in Scottish Plankton Collections. Journ. Mar. Biol. Assoc., N. S., XXVIII, 489–491.

— The Distribution of Thaliacea (Salps and Doliolids) in Scottish Waters, 1920—1939. Scient. Inv., Fish. Div., Scottish Home Department, 1949, No. 1.

Lucas, C. E.: External Metabolites and Ecological Adaptation. Society for Experimental Biology Symposia, No. III, 336—356.

Rees, C. B.: Continuous Plankton Records: the Distribution of *Calanus finmarchicus* (Gunn.) and its two forms in the North Sea, 1938—1939. Hull Bull. Mar. Ecol., XIV, 215—275.

The series of monthly herring charts for the North Sea and adjacent waters is now prepared and is expected to be published shortly.

SOUTHERN NORTH SEA COMMITTEE

1949

By

R. S. Wimpenny

Scientific investigations at sea were somewhat more extensive in 1949 than in the previous year, for, although the laying up of the Danish research ship "Dana" meant the loss of the part of her time usually spent in the Southern North Sea, substantial assistance in carrying out the Committee's programme was afforded by the full-time participation of the new Dutch research ship "Antoni van Leeuwenhoek". The year has also been made notable by the initiative of the Danish Government in carrying out a large transplantation of small plaice from the Horn's Reef and western Limfjord areas to the eastern part of the Dogger Bank.

Work at Sea.

Belgium.

No sea work was carried out in the Committee's area in 1949.

Denmark.

The Danish research ship "Dana" was not in commission in 1949 and consequently no work was carried out in the open southern North Sea.

The small motor boat operations in the "Wadden-Sea" continued as usual and in addition there was a very substantial transplantation experiment carried out by well-smacks of which further mention is made in the section on "Plaice" below.

England.

The motor drifter "Onaway" and the steam trawler "Sir Lancelot" were occupied in the North Sea and English Channel throughout the year, the latter making twenty cruises, whilst the former was engaged on five surveys in different areas which involved a large number of separate short fishing voyages.

The "Sir Lancelot" carried out a series of five cruises off the Yorkshire coast between January and March in order to chart the distribution of plaice eggs in the Flamborough area. Thereafter until May, the ship made four cruises off the NE. coast of England, taking plankton samples and making echo-runs through the area of the herring fishery. In June and September echo-runs for pilchards and plankton collections for pilchard eggs were made in the English Channel between the Straits of Dover and the Scilly Islands. During the summer, four cruises were devoted to comparative fishing and gear tests. Finally, between October and the end of the year five cruises were made consisting of plankton and echo-surveys of the herring grounds between Cromer Knoll and the Sandettié Bank.

France.

Le "Président Théodore Tissier" a travaillé du 15 au 18 Septembre entre Ymuiden et Esbjerg et entre ce dernier port et Stavanger; puis du 14 au 18 Octobre depuis le 55° L. N. jusqu'au Pas de Calais; 34 stations ont été effectuées avec prises d'échantillons d'eau, prélèvements de température jusqu'auprès du fond (à 0 m., 25 m., 50 m., 100 m. etc.), pêches regulières de plancton, 10 dragages d'échantillons de fond, et opérations de chalutage au "Little Fisher Bank", dans la partie occidentale du "Dogger Bank" et sur le "Silver Pit".

Le "Président Théodore Tissier" a sillonné la Manche en zig-zag entre la côte anglaise et la côte française à 4 reprises: de Brest à Boulogne et de Boulogne vers l'ouest en Mai, de Brest, à Boulogne en Septembre; et de Boulogne à Brest en Octobre. Les opérations habituelles, stations hydrologiques, pêches planctoniques, dragages, chalutages, ont été effectuées en Manche orientale suivant les sections: Barfleur - Dungeness — Boulogne — Beachy Head — Barfleur — Portland, du 5 au 13 Mai; — Portland — Cap d'Antifer — Boulogne les 7 et 8 Septembre; — enfin Boulogne — Beachy Head — Cap d'Antifer — Barfleur, les 24 et 25 Octobre 1949. Le chalut a été mis en pêche sur la "Bassure de Baas" en Mai, au sud de "Bassurelle" en Septembre, et près du Cap d'Antifer en Octobre.

De son côté, l'aviso "Ailette" de la Marine Nationale a fait dans le sud de la Mer du Nord: 30 stations hydrologiques de Juin à Septembre.

Plusieurs sorties en mer ont été effectuées a bord de bateaux de pêche.

Holland.

The new Dutch research vessel "Antoni van Leeuwenhoek", a 150 h.p. diesel engined cutter, started work in February completing 38 cruises during the year. Bad weather often interfered with the planned programme. This was especially the case in the periods February—April and November—December. Between February and April plankton cruises were made in order to investigate the distribution of plaice larvae. Fishing at fixed stations with a standard otter-trawl was carried out in February, May, August and November in order to investigate the plaice stock along the Dutch coast. Attention was paid to diurnal variation in the catches.

One cruise was made to test the qualities of the Belgian otter-boards invented by M. Pierlot.

Some plaice work (trawling and fishing with horizontal stramin nets) was done aboard other vessels in the Dutch "Wadden-Sea".

Echo-sounding experiments were made in the period October—December.

Norway
Poland
Sweden

No work reported as having been carried out in the Committee's area in 1949.

Scotland.

The Scottish research ship "Explorer" entered the southern North Sea in August in order to carry out a comparative fishing experiment with the English research ship "Sir Lancelot" in the Smith's Knoll area.

Work on the Fish Species.

General.

The collection of statistics giving the catch per unit of time for the various species of demersal fish in the statistical rectangles has been continued by Holland, but difficulties have been encountered owing to the frequent use of the herring and mackerel trawl alternating with the orthodox demersal fish trawl. During the cruise of the "Président Théodore Tissier", about a thousand whiting, haddock, and flatfish from the Little Fisher Bank and a further 450 cod, haddock, whitings, lemon soles and plaice from hauls made in the Dogger Bank and Silver Pit areas, were measured.

Studies of the shrimp (*Crangon vulgaris*) and the mussel (*Mytilus edulis*) have been commenced in Belgium.

Porbeagle.

This shark has become an important export from Esbjerg in recent years and during 1949, 2,500 individuals were measured.

Sprat.

Experimental fishing with a ring-net off the SE. coast of England showed that this gear was an efficient method of capture. Studies made on the shoaling of this species showed that the fish remained in the western ends of bays until there were strong easterly winds, when they scattered and went into the deeper off-shore water.

Twaite Shad.

Some biological observations were made on this species in February by French biologists.

Pilchard.

English investigations on the pilchard included the examination of commercial samples from the Channel area throughout the season. A plot of pilchard eggs covering the whole of the English Channel in June revealed the existence of concentrations of adult fish unexpectedly widespread throughout the area.

Cod.

Over 35,000 cod measurements were made on English fish markets, 21,451 at North Shields and 13,713 at Grimsby.

Haddock.

For the assistance of the Scottish investigations on this species 7,728 length measurements were obtained on Grimsby fish market.

Whiting.

Measurements and otoliths were taken from samples obtained by the "Président Théodore Tissier" in the Little Fisher Bank, Dogger Bank and Silver Pits regions.

Horse Mackerel.

In the eastern Channel twenty horse mackerel were marked and released by the French investigators.

Black Sea-Bream.

During the French work in the eastern Channel, age-determination was undertaken using the scales and a small number of these fish was marked and released.

Grey Gurnard.

On the North Sea cruise of the "Président Théodore Tissier", 500 grey gurnards were measured, 250 from the Little Fisher Bank and 250 from the Dogger Bank and the Silver Pits.

Plaice.

An English research vessel was employed in the early part of the year on making a survey of a spawning ground known to exist in the Flamborough area. The number of eggs was found to be about one twentieth of the concentration found in the Southern Bight in 1948. Dutch work conducted in February and April was devoted to investigating the horisontal distribution of plaice larvae between the Southern Bight spawning ground and the Dutch coast and the vertical distribution at or shortly after metamorphosis. Later in the season this work was continued by observations on the density of 0-group plaice in the Dutch "Wadden-Sea". Studies on 0-group plaice were carried out by Denmark as in former years, using motor boats in the "Wadden-Sea" near Esbjerg. The catch per hour of the young-fish trawl was low —59 per hour—a figure well below the average for 1935—49. About 500 small plaice in this area were marked, partly with ebonite and partly with plastic marks.

Market measurements of lengths at English ports amounted to about 116,000, which were distributed as follows: Grimsby, 37,645; Lowestoft, 57,828; and Rye Bay, 13,913.

Approximately 10,000 were also examined for weight and age. At Esbjerg 11,000 plaice were measured in June, August and October and otoliths were taken from about 800 specimens. Age-census work carried out on the markets at Lowestoft and Grimsby agreed with similar samples taken on the spawning grounds. It appeared that few old fish remained from the generations protected by the war and that the 1945 brood was very strongly represented.

Fishing along lines from the Dutch coast westward to about 3° E. was undertaken by Holland to obtain information on age composition, density and growth of the plaice in this area. Dutch otolith investigations proved that the year-rings formed in some calendar years, show special characteristics, at least in samples taken from a restricted area. This is of assistance in reading the otoliths.

The Danish Government carried out a large-scale transplantation of plaice by well-smacks from the Horn's Reef area and the most westerly Limfjord (Thyborøn) to the eastern part of the Dogger Bank. A total of about one million plaice was transplanted in the period between 31st March and 19th May. Approximately 118,000 came from the Horn's Reef area and 860,000 from Thyborøn. Of the transplanted plaice 4,654 were marked.

Sole.

Measurements were continued at Lowestoft market where a little over 4,000 fish were dealt with. The catches, which had reached very low levels, recovered somewhat later in the year.

Rational Fishing.

In England the theory of fish populations developed at Lowestoft has been substantially amplified and a little modified during the year. Methods for using data on food consumption and growth have been correlated and examples have been worked out from existing data giving growth, mortality and reproduction coefficients. A new analysis of age-census data for plaice at Grimsby and Lowestoft is expected to permit a reduction of future otolith sampling by 90 %.

Inter-ship comparisons of fishing power have continued to be made by England and Scotland. A comparison between the Scottish research trawler "Explorer" and the English research trawler "Sir Lancelot", confirmed earlier results that the latter's gear was more efficient for catching flatfish, but the addition of a tickler to the "Explorer"'s trawl made her nearly equal. A comparison in the Channel between the 125′ "Sir Lancelot" and a 50′ Newhaven motor trawler showed that the larger ship was three times as efficient for flatfish.

Publications.

(Other than those in the Council's series.)

CATTLEY, J. G. and HARDING, J. P.: "*Penilia*, a Cladoceran normally found off Tropical and Sub-Tropical coasts recorded in the North Sea Plankton". Nature **164**, p. 238, 1949.

REES, C. B. and CATTLEY, J. G.: "*Processa acquimana* Paulsen in the North Sea". Nature **164**, p. 367, 1949.

TRANSITION AREA COMMITTEE

1949

By

ERIK M. POULSEN

Denmark.

(ERIK M. POULSEN.)

Hydrography.

Observations of temperature, salinity, and in certain cases of oxygen content, were made in connection with the experimental fishing.

Plankton.

Samples of macroplankton (especially eggs and larvae of fish) were taken weekly or fortnightly from the light-vessels Anholt Knob, Schultz Gr. and Halskov Rev (the Kattegat and the Belts).

Benthic Food.

Valuations of the bottom were carried out by means of the Petersen bottom sampler in the Limfjord, the Kattegat and the Belts.

The Fish.

Eggs and Larvae. Quantitative fishing experiments with the ringtrawl and the Hensen net were carried out from S/S "Biologen" in April—May and later in August—October.

Flat Fish. The density of the 0-group of plaice, flounder, turbot and brill was investigated during the summer months by means of the Johansen young-plaice trawl used from the motorboat "Havkatten" along the shores inside the Skaw.

The density outside the shore waters of the various age-groups of the flat fishes was examined by means of hauls with a small-meshed trawl, the eel-tog, in certain areas from the Skagerak to the Baltic during the months April—October.

Samples of commercially caught flat fishes were investigated in the various seasons of the year, and market measurements especially of plaice were carried out at several fishing ports.

In connection with the transplantation from the Nissum Br. of 100,000 kg. young plaice to the central Limfjord and 65,000 kg. to the Belt Sea and adjacent waters, samples of the plaice caught for transplantation were examined for age, length and number of anal fin rays, and marking experiments were also made.

Cod and Whiting. The density of the stock was investigated by means of hauls with the eel-tog, and samples were analysed for age, length and racial characters.

Waste fish. The composition of samples was investigated and measurements of the various species of fish found in the samples were carried out.

Predictions of the yield of the mackerel and silver eel fisheries were given.

Crustaceans. The fishing of the deep-sea-prawn trawl with various mesh-sizes and closing methods was investigated. Samples of deep-sea prawn and Norwegian lobster were measured.

Norway.

(Alf Dannevig.)

Hydrography.

Observations on the temperature and salinity of the sea water were taken every working day at Flødevigen at 0, 1 and 15 metres below the surface.

In the neighbouring parts of the Skagerak and in the Oslofjord 105 hydrographic stations were worked.

Biology.

Fish Eggs and Larvae. Material was collected at 48 stations. 193 hauls were made with the egg-net, and 72 using the larvae-net.

Gadidae. The 0-group. Experimental fishing with a shore-seine in the littoral region has been carried out according to the pre-war scheme, 77 hauls having been made on the Skagerak coast and 56 in the Oslofjord.

Older fishes. Esperimental fishing with traps has been carried on at Flødevigen.

Lobsters. Statistics from individual fishermen have been collected according to the pre-war scheme.

The Hatchery. The hatching of cod fry was carried out on a fairly considerable scale, and the rearing of lobster larvae was successful.

Oyster. The artificial pond was worked as in previous years—but without success, no spat being attached.

Experimental rearing of plaice, cod and herring was successful.

Sweden.

(Arvid R. Molander.)

Biology.

The investigations on the sprat were carried out mainly by collecting of as well information concerning the localities and the seasons of the commercial fishery as statistics of the daily landings at the various ports of the west coast of Sweden. The distribution of the 0-Gr. of sprat in various fjords of Bohuslän during autumn and winter was investigated.

Collections of statistical data of the fishery for haddock, lemon sole, and plaice were made in the fishing port of Göteborg in order to investigate the alterations in the stocks of these fishes.

The strength of the two youngest year-classes of the plaice, the turbot, and the flounder along the west and south coast was investigated by means of hauls in shallow water with the Johansen young plaice trawl.

Experimental researches on the influence of certain ecological factors on the forming of milieu-types were carried out.

Hydrography.

See the report of the Hydrographical Committee.

Poland.

No report received.

Publications.

Blegvad, H.: Beretning om Fiskeriundersøgelserne i farvandene omkring Danmark i 1948. Vestjysk Fiskeritidende 10.1.1949.

Dannevig, Alf: The Variation in Growth of young Codfishes from the Norwegian Skager Rack Coast. Cod Scales as Indicator of Local Stocks. Rep. Norw. Fish. and Mar. Invest., Vol. IX, No. 6. Bergen 1949.

— Vekslingene i de store fiskerier. "Naturen", Nr. 4, 1949.

Jensen, Aage J. C.: Udsigterne for makrelfiskeriet i det østlige Skagerak og det nordlige Kattegat. Dansk Fiskeritid. 1949, p. 203.

— Udsigterne for blankålsfiskeriet. Dansk Fiskeritid. 1949, p. 365.

BALTIC AREA COMMITTEE

1949

By

Chr. Hessle

Reports of work carried out have been received from Denmark, Finland and Sweden.

Denmark.

(Aage J. C. Jensen.)

The S/S "Biologen" worked to the south of Møen—Scania and at Bornholm in April—May and in August, and at Møen in October; M/B "Havkatten" on the coast of Seeland and Møen in August.

Biology.

Plaice, Flounder and Turbot. Quantitative fishing experiments with the Johansen young-fish trawl on the coasts were carried out from the "Havkatten" and at Bornholm from the "Biologen" and from a motorboat in August together with quantitative fishing with the hand-push-net. The stock of older fishes was investigated by the fishing experiments mentioned for the cod.

Cod. Quantitative fishing experiments were carried out from the "Biologen" during the cruises in April—May and in August in order to determine the distribution, number, length, age etc.

Salmon. In January and December measurements and age determinations were carried out on board two Danish cutters off the Polish and Russian coasts. A small number of salmon of 50—85 cm. length were marked. Scales were also collected from a commercial catch in November.

Eggs and Larvae. Material for estimating the abundance of eggs has been collected by Hensen net hauls.

Hydrography, Plankton, and Benthic Food.

Observations on the hydrography, plankton, and benthic food were made during the cruises of the "Biologen", benthic food being studied in April—May only.

Fortnightly hydrographical observations at a station about 1·5 naut. mile SE. of Christiansø were started on 31st August from the Nautical-Meteorological Department of the Meteorological Institute.

Finland.

(T. H. Järvi.)

Biology.

Observations on the biology of the ide (*Leuciscus idus* L.) were carried out on the southern coast of Finland.

Benthic Food.

Ecological investigations were made on the *Bosmina maritima* and different Gammarus species along the coasts, and observations on Turbellaria were carried out at Tvärminne zoological station.

Sweden.

(Harald Alander.)

The research vessel "Eystrasalt" was kept in commission from April to December and the cruises were extended from the Sound to the northern part of the Gulf of Bothnia. The research vessel "Skagerak" made cruises in the southern Baltic in April and October.

Biology.

Plaice, Flounder and Turbot. Quantitative fishing experiments with the Johansen young-plaice trawl were carried out in shallow water on the coast of Scania and Blekinge in October. The stock of flatfish was investigated in the Bornholm area.

Cod. The stock of cod was investigated and several fishing experiments were made in the area from the southern Baltic to the Sea of Bothnia. Samples were collected and analysed as to length, age and maturity.

Sprat. Investigations were made on the stock of sprat in the southern and central Baltic.

Eel. Marking experiments were carried out in the southern part of Kalmar Sound. About 300 eels were tagged.

Plankton.

A few quantitative samples of plankton were collected with the Hensen net from different parts of the area.

Hydrography.

A very great number of hydrographic observations as to temperature, salinity, oxygen content and hydrogen-ion concentration have been made, partly in cooperation with Finnish hydrographers.

Aids to Fishing.

The research vessel "Eystrasalt" has been commissioned for locating shoals of herring with the echosounder and for experiments with new types of fishing-gear (pelagic trawls).

Reports of other Committees.

HYDROGRAPHICAL COMMITTEE

1949

By

HELGE THOMSEN

Belgium.

No report received.

Denmark.

(HELGE THOMSEN.)

Cruises.

The eastern halves of sections R and S of the international North Sea Scheme were run by the rescue ship "F. V. Mortensen" 25.—28. April and 5.—7. September.

The four permanent sections off the west coast of Greenland were run by the survey ship "Heimdal" as follows.

Off Frederikshaab: 3. June, 7. September,
Fylla Bank: 2. June, 6. September,
Lille Hellefiskebank: 1. June, 2. September,
Store Hellefiskebank: 31. May, 1. September.

Other hydrographic investigations were carried out in the waters round Disko by "Heimdal", and in West Greenland coastal waters by m/c "Adolf Jensen".

Observations from Liners.

Surface samples were collected from liners on the routes Copenhagen—Greenland, Copenhagen—Iceland and Esbjerg—Grimsby.

Observations from Light Vessels and Coastal Stations.

Regular hydrographic observations have been made by the Danish Meteorological Institute as follows:—

1) daily observations of temperature and salinity from 12 light vessels and 16 coastal stations.
2) 4-hourly estimations of the surface current from 12 light vessels.
3) From 31. August, observations twice monthly of t°, S $^0/_{00}$, and O_2 in the deep off Christiansø (Baltic).

Éire.

(A. E. J. WENT.)

Surface temperatures were taken at "Conigsbeg" lighthouse. Owing to the lack of a special research vessel no hydrographical work was done at sea during 1949.

England.

(J. R. LUMBY.)

Fisheries Laboratory, Lowestoft.

1. **Research Ships.** In the North Sea the usual monthly observations were made on the Flamborough line. During January, February, and March salinity and temperature, and some phosphate, observations were made in the southern North Sea, mainly in the Flamborough Head locality, in connexion with plaice-egg studies. During March, April, May, and June, observations of salinity, temperature, oxygen, phosphate, silicate, and nitrate were made in connexion with plankton studies off the north-east coast. The International Survey sections S (Stas. 1—7), T, and U were run between 27. and 30. April.

In the Barents Sea, salinity, temperature, oxygen, and phosphate observations were made along two sections, Norway to Bear Island, and westward from Bear Island in March, July, and September. Other salinity and temperature observations were made throughout the year in connexion with studies of the distribution of fishing.

2. **Commercial Vessel, Lightships, and Ocean Weather Ships.** Routine observations of surface salinity and temperature were maintained as hitherto. Observations were started from the "Galloper" lightship in January and from the "Varne" in August. Thermographs were installed on the Southampton-Jersey line in August. The Ocean Weather Ships continued to take surface observations at 3-hourly intervals on passage between Greenock and Stations "I" and "J", and daily while on station.

Marine Biological Association, Plymouth.

International Hydrographic Station E 1 (50°02′ N., 4°22′ W.) was visited monthly and observations made for salinity, temperature, and inorganic and total phosphorus content. In March, May, and July excursions, required for other investigations, were made to positions west of the Scilly Islands and similar observations made there. On 9.—10. March the water temperature between 49°50′ N. and 50°36′ N. along the meridian 8° W. long. was exceptionally high for the time of year (9·95—10·20° C.). An account of the distribution of phosphorus is in press (Armstrong and Harvey, Journ. Mar. Biol. Assoc., 1950, Vol. XXIX, No. 1).

Department of Oceanography, Liverpool University.

Surface temperatures and salinities were observed three times per week at each of eight stations in the Irish Sea. A statistical investigation on similar observations taken during 1935—46 has been published by Mr. D. C. Gilles, and an investigation on the mean current through the Irish Sea has been submitted for publication by Mr. K. F. Bowden.

Records of the simultaneous fluctuations of a tidal current at two near points were taken during several weeks, as part of a study of turbulence. An analysis of records taken at one point in 1948 has been published by Mr. Bowden and Professor Proudman.

Admiralty (Hydrographic Department).

The work done so far has been mainly preparatory. It is to be regretted that the continuous observations of water movements from lightships, of the kind made before the war, have not been resumed. Endeavours are being made to start the work again at the "Varne", and, possibly, at other English lightships also. The "Sandettié" position is not now available, as the French authorities have not replaced their vessel on that station.

It is learnt that Belgium intends to start current observations from the "West Hinder", and the Netherlands has the work well in train again. The current-meter used is the Vertical Log, in its old form.

Two variants of the Vertical Log have been developed, both of which can be used from unattended buoys. One of these provides clock times, as required by tides specialists; the other, less elaborate, records overall water movement.

As a preliminary, unpublished data on lightship observations are being prepared for publication, and short essays on the results written; one such on data from the "Mouse", in the Thames estuary, is expected to have appeared in the meteorological journal *Weather*.

National Institute of Oceanography.

The studies of short and long waves and off the frictional drag of the wind on the sea surface have been continued.

Preparations have been made to sail the R.R.S. "William Scoresby" and "Discovery II" in the present year (1950), to round-off the pre-war programme of oceanographical observations in the Southern Ocean.

The establishment of the National Institute of Oceanography has almost been completed; the studies mentioned above and the work in the Southern Ocean will eventually be carried on by the Institute.

Finland.

(G. Granqvist.)

a) At 18 coastal stations (Marjaniemi, Ulkokalla, Tankar, Valsörarna, Norrskär, Sälgrund, Säppi/Säbbskär, Märket, Lågskär, Jungfruskär, Lohm, Utö, Bengtskär, Russarö, Tvärminne, Harmaja/Gråhara, Söderskär, and Tammio/Stamö), the following work was carried out:—

1) measurement of surface temperatures on the shore, 1—3 times daily,
2) taking of shore water samples for determination of the salinity, 6 times a month,
3) measurement of temperatures and taking of water samples for salinity determination from a series of depths 3 times a month, at a fixed place in the sea outside the station.

b) At Helsinki/Helsingfors measurements of the surface temperature and a water sample for salinity determination of the shore water were taken daily.

c) At Isokari/Enskär the surface temperature was measured daily and salinity water samples were taken 6 times a month.

d) At 8 lightships ("Kemi", "Nahkiainen", "Snipan", "Storkallegrund", "Rauma", "Storbrotten", "Helsinki", and "Kalbådagrund") the following work was carried out:—

1) measurement of surface temperatures, 3 times daily,
2) taking of surface samples for salinity determination, 6 times a month,
3) measurement of temperatures and taking of water samples for salinity determination from a series of depths, 3 times a month,
4) wind observations, and current measurements at the surface, the bottom, and a middle depth with the aid of current crosses and buoys, 3 times daily,

e) At 13 tide-gauge (mareograph) stations (Kemi, Toppila, Hornankallio, Leppäluoto/Alholmen, Vaskiluoto/Vasklot, Kaskinen/Kaskö, Mäntyluoto, Rauma/Raumo, Ruissalo/Runsala, Degerby, Hanko/Hangö, Helsinki/Helsingfors, and Hamina/Frederikshamn) continuous water-level registrations were taken.

f) At 12 tide-pole stations (Rönnskär, Säppi/Säbbskär, Lyökki/Lökö, Lypyrtti/Lypertö, Kobbaklintar, Strömma, Lemström, Jungfrusund, Utö, Russarö, Tvärminne, and Söderskär) 1—3 daily water-level observations were taken.

g) Continuous ice observations at 70 coastal stations and from ice breakers in operation were made.

h) Regular ice observations have been made by reconnaissance flights.

i) A cruise in the archipelago was made during two weeks of July. An hydrographer from Finland has taken part in a cruise in the Gulf of Bothnia, with the Swedish research ship "Eystrasalt".

j) Surface observations of salinity and temperature have been taken from liners on the Helsingfors-Copenhagen line, since June.

France.

(Jean le Gall.)

Le navire océanographique "Président Théodore Tissier" a effectué, du 2 Mai au 30 Octobre 1949, une campagne de six mois, opérant en Mer du Nord, en Manche, sur le Plateau Continental Celte, dans le Golfe de Gascogne, à l'ouest de la Péninsule Ibérique et en Méditerranée occidentale. 373 stations hydrologiques, 1200 relevés de températures et 940 prélèvements d'échantillons d'eau ont été effectués indépendamment des opérations habituelles de sondage, dragage, chalutage, pêches planctoniques et essais de pêche.

L'Aviso "Ailette" de la Marine Nationale a travaillé en Avril sur le Plateau Continental Celte et de Juin à Septembre en Mer du Nord.

La Frégate "Aventure" a continué l'étude des conditions hydrologiques sur les lieux de pêche de la morue à Terre-Neuve et au Groënland.

Les frégates météorologiques "Laplace", "Le Brix" et "Mermoz" ont continué leurs observations au point "L" (39° N., 17° W.G.) reporté au point "K" (45° N., 16° W.G.) depuis Juin 1949. Des prélèvements réguliers d'eau et de température en surface et à diverses profondeurs jusqu'à 400 mètres y ont été régulièrement effectués.

Les observations hydrologiques habituelles ont été faites en Mer du Nord, en Manche, en Mer Celtique et dans le Golfe de Gascogne par le personnel de l'Office Scientifique et Technique des Pêches Maritimes embarqué sur les bateaux de pêche.

Holland.

(J. W. Termijtelen.)

The following investigations were carried out:—

1) Temperature and salinity data were collected in the southern North Sea by the oceanographic section of the Kon. Ned. Meteor. Instituut in collaboration with the Netherlands Fisheries Research Institute during the months February, March, and April and during the international cruises of April and September.

2) Continuous temperature, salinity, and current observations were carried out on board the light vessels "Goeree", "Texel", and "Terschellingerbank".

3) Hydrographic surveys of the Wadden Sea area were carried out by the Zoölogisch Station at Den Helder.

Iceland.

(Unsteinn Stefánsson.)

1) **Cruises.** In 1949 two hydrographic cruises were made, from 10. July to 22. September. A number of hydrographic sections were worked in the Icelandic coastal waters. Off the north coast the sections were extended north to 68° N. On both cruises a section was run on the line Langanes-Jan Mayen.

2) **The Sea-Surface Thermograph Service.** Sea-surface thermographs were installed on 3 liners, one running from Reykjavik-New York, and two coastal liners making regular routes around the island. During the summer months one of the coastal liners ran from Reykjavik to Glasgow.

Norway.

(J. Eggvin.)

Directorate of Fisheries, Institute of Marine Research.

1) Cruises. During 1949, 5 cruises were undertaken by "Johan Hjort" and 11 cruises by 9 chartered vessels. Operations were carried out in Norwegian coastal waters, the Norwegian Sea, the Barents Sea, Greenland waters, Skagerak, and in the northern North Sea. At 808 hydrographical stations, 6491 observations of temperature were made and 6292 salinity samples taken. 3880 analyses of pH, O_2 and P_2O_5 were made. In addition 137 bathythermograph stations were worked.

2) Permanent Stations. At the 8 permanent oceanographical stations off the Norwegian coast, observations of temperature with collection of samples for salinity were made during the whole year at the standard depths.

3) The Sea-Surface Thermograph Service. Thermograph records were obtained from 8 liners running on the following routes from Bergen: a) to Newcastle, b) to Antwerp, c) to New York, d) to Kirkenes (East Finnmark), and e) to Oslo.

Salinity samples were collected at fixed positions on these routes.

The sea-surface thermograph records on board the weather ships "Polarfront I" and "Polarfront II" on station M (66° N., 2° E.) and between this station and Bergen have been continued.

Poland.

No report received.

Portugal.

(A. M. Ramalho.)

No ship has been available for work at sea during 1949.

Scotland.

(John B. Tait.)

Scottish hydrographic work was greatly extended during 1949 as can be judged by comparison of the following figures with those given for previous years. The regions surveyed included the Northern North Sea to the Dogger Bank, Faroe-Shetland Channel and west Scottish waters, and, in the month of May, the North-Eastern Atlantic Ocean between Scotland and Iceland. The other regions were visited more than once throughout the year.

Serial temperature-salinity data to the combined total of 6600 observations were recorded at 890 positions on the above surveys. In addition, 550 oxygen and a slightly lesser number of phosphate determinations were carried out in respect of surface and sub-surface waters in the Faroe-Shetland Channel and the Northern North Sea. Surface drift-bottle liberations to the number of 2145 were continued as in former years from 429 selected positions. In this branch of hydrographical investigation, British Weather Ships co-operated to the extent of liberating a total of 585 drifters regularly throughout the year *en route* from the Firth of Clyde to Weather Ship Station I in latitude 60° N., longitude 20° W.

A comprehensive survey report on the immediate results of the foregoing operations will appear in *Annales Biologiques*, VI (1949), and the observational data will be published in due course in the appropriate issue of the *Bulletin Hydrographique.*

Spain.

(Fernando Balén.)

Instituto Hidrografico de la Marina, Seccion Hidrografica, in collaboration with Instituto Español de Oceanografía.

Off the west coast of Africa between the parallels 23°40′ N. Lat. and 22°20′ N. Lat. measurements of temperatures and collection of water samples from various depths were carried out in connection with sounding work from the "Malaspina".

Uninterrupted sea level observations were carried out during one month for computing harmonic constants at 3 localities in Spain, 4 localities on the coast of Africa, and at Santa Cruz de Tenerife.

Sweden.

(B. Kullenberg.)

During 1949 the "Skagerak" has carried out three hydrographical cruises in the North Sea, covering the K, J, Q, and L-sections 28. April—6. May, the J and K-sections 5.—8. September, and the L and Q-sections 28. September—1. October. Six hydrographical cruises have been carried out in the Skagerak from January until December, covering the P and M-sections. Temperature, salinity, oxygen contents, phosphate, and, occasionally, P_H, have been measured.

The customary observations of temperature, salinity, and currents have been carried from 10 lightships and one coastal station, Bornö in the Gulmar Fiord.

During a cruise of the "Eystrasalt" in the Baltic hydrographical observations have been carried out from the Sound to the Gulf of Bothnia.

PLANKTON COMMITTEE

1949

By

F. S. Russell

Denmark.

(Poul Jespersen.)

1. Investigations on the food of the herring in the waters round Bornholm, which have been carried out through several years, have been continued.

2. The stomach-contents in a sample of herring caught over deep water NE. of the Faroes have been investigated.

3. A report has been published on the holoplankton animals in the Isefjord, Seeland, during the years 1940—43.

4. The working up of the material of deep-sea copepods from North Atlantic waters has been continued.

5. A report on the occurrence of the diatom *Nitzschia frigida* in Roskilde Fjord (Seeland) is under preparation.

6. The examination of phytoplankton in Præstø Bay (Seeland) has been continued.

7. Collections of plankton samples from the lightship "Halskov Rev" in the Great Belt, started in 1948, have been brought to an end in 1949.

8. A paper on the phytoplankton in the coastal waters at the south-western part of Jutland ("Waddensea") has been published.

9. A preliminary investigation on the quantitative distribution of larger zooplankton organisms in different parts of the Atlantic north of 50° N. Lat. has been started. The samples have been collected on the transatlantic cruises of the "Dana" in 1947 and 1948.

10. A paper of the late Prof. Ove Paulsen on the Dinoflagellates has been published.

11. The examination of the phytoplankton collected during the cruises of "Dana" 1946—48 in the southern North Sea and in North Atlantic waters has been continued.

Publications.

Grøntved, Jul.: "Investigations on the phytoplankton in the Danish Waddensea in July 1941." Medd. Komm. Danmarks Fisk. & Havunders. Ser. Plankton, Vol. V, No. 2.

Jespersen, Poul: "Investigations on the occurrence and quantity of holoplankton animals in the Isefjord, 1940—43." Ibid., Vol. V, No. 3.

Paulsen, Ove: "Observations on Dinoflagellates." Edited by Jul. Grøntved. Kgl. Vid. Selsk. Biol. Skrifter, Vol. VI, No. 4.

France.

Office des Pêches, Paris (Jacqueline Fleury).

Le Service Plancton est spécialement chargé du triage et de l'étude du phytoplancton et du zooplancton provenant de pêches faites:

au cours des croisières du "Président Théodore Tissier", des avisos "Aventure" et "Ailette";

à bord des frégates météorologiques françaises stationnées au point "L", puis au point "K";

par les laboratoires ostréicoles de l'Office Scientifique et Technique des Pêches;

au cours des essais entrepris par cet organisme sur l'utilisation des engrais minéraux pour l'élevage des huîtres;

et de prélèvements stomacaux effectués sur des lots de poissons étudiés dans les laboratoires biologiques côtiers.

De nombreux triages des collections et des listes d'examen ont été établies; elles permettront l'étude des variations saisonnières du plancton des côtes françaises de l'Atlantique et de la Manche.

Plusieurs rapports ont été rédigés sur:

le plancton de la Mer de Barentz et de la Mer du Nord. Croisière du "Miss Jacqueline" Année 1948 (Melle Fortin, Melle Fleury);

les principales espèces planctoniques recueillies par la "Ville d'Ys" (1927) et le "Victoria" (1946—47) sur les Bancs de Terre-Neuve (Melle Fleury);

les copépodes pélagiques de la Manche capturés en surface au cours de la croisière du navire océanographique "Président Théodore Tissier" en Juillet 1946 et en Mai, Septembre et Novembre 1949 (Melle Fleury);

la répartition des diatomées recueillies dans la Manche au cours des croisières du "Président Théodore Tissier" en 1946 et 1949 (Melle Fortin);

les diatomées récoltées au cours des croisières du "Président Théodore Tissier" en 1948 (Melle Fortin); examens des contenus stomacaux de sardines prélevés à Belle Isle (Melle Fleury).

Algeria (F. Bernard).

En Algérie, sept chercheurs ont poursuivi en 1949 des études méthodiques sur le phytoplancton, les substances nutritives et divers groupes du zooplancton.

F. Bernard, professeur, a continué des mesures de salinités, températures, phosphates et nitrates au large d'Alger, de 0 à 1,000 m. Parallèlement, J. Lecal a déterminé les flagellés calcaires des mêmes eaux, comprenant des formes nouvelles et remarquables; elle a montré la sécrétion endogène du squelette minéral et la nature mélanique des pigments rouges de ces Protistes. D. Kruger a suivi, jour par jour et parfois heure par heure les variations du microplancton en baie d'Alger.

Du zooplancton a été récolté deux fois par mois au filet, à 0, 50, 200, 300 et 400 mètres, dans la zone pélagique. Ses changements quantitatifs furent analysés par F. Bernard, pendant que le professeur Rose étudiait les Copépodes, les *Sagitta* et les *Creseis*, en collaboration avec M. Hamon et J. Vaissiere pour les parasites de ces animaux. A. Franc a publié ses observations sur les Gastéropodes pélagiques d'Alger.

Enfin, F. Bernard et J. Lecal ont commencé l'examen de l'influence des eaux douces sur la fertilité marine, particulièrement pour les crues de l'oued Harrach, qui apportent des nitrates et des détritus très au large. Il en résulte un rapport C/N deux à trois fois plus faible que dans les mers ouvertes, même dans les sédiments côtiers.

Publications.

Bernard, F.: XIII[e] Congr. Int. de Zool., p. 194.
Bernard, F. et J. Lecal: Bull. Inst. Océanogr. 963. 1950.
Lecal, J.: XIIIe Congr. Int. Zool., p. 213. — Bull. Soc. H. N. Afr. Nord, 1950.
Franc, A.: Bull. Soc. Zool. Fr., Mai 1949. — Journ. de Conchyl., Vol. 88, p. 13, et Vol. 89, p. 209, 1949.

Great Britain.

Aberdeen (J. H. Fraser).

During 1949 plankton of the Scottish and surrounding areas was extensively sampled by the Scottish research vessels "Explorer", "Scotia", "Clupea" and "Kathleen". This included work in the central and northern North Sea, Faroe-Shetland Channel, Faroe, Iceland, the Outer Banks and off-shore and inshore waters of the west coast of Scotland. Broad details of the results of these investigations are given in the *Annales Biologiques*, Volume VI (1949), (Northern North Sea).

Changes in the gear used from previous years are to be reported. They include the use of silk (26 meshes per linear inch) instead of stramin for the 1 metre tow-nets; and the introduction of a new net termed the "Hensen Minor", built on the "Hensen" principle, but 14 cm. wide at the mouth and 20 cm. behind the canvas cone. These small nets are also made of silk (60 or 180 meshes per linear inch) and are towed horizontally by the smaller vessels when making a general assessment of the zooplankton and phytoplankton present, although the larger and coarser nets are used when searching for herring larvae.

The main features of the plankton distribution revealed by these investigations are:—

1. The infiltration of oceanic plankton towards the Skagerak in the early months of the year; and the general tendency for *S. elegans* to be distributed further east in the spring than in the autumn when it was concentrated nearer the Scottish coast.

2. Scarcity of general zooplankton in the northern North Sea in spring when this area contained oceanic water with *Sagitta serratodentata*.

3. The presence of two inflowing oceanic streams into the Faroe Channel, one containing doliolids and Lusitanian plankton, which entered at the southern side of the Faroe Channel and penetrated into the North Sea *via* the Orkney passages: and the other containing open Atlantic plankton from the west, which entered the northern side of the Faroe Channel and penetrated into the North Sea *via* the north of Shetland; the latter stream contained salps but no doliolids and had a much greater crustacean content than the Lusitanian stream.

4. The presence of a few specimens of *S. setosa* in the Minch and south of Barra Head, suggesting a theory that the Irish Sea water had been carried out through the north channel and had mixed with the inshore water west of Scotland.

5. The use of deep tow-nets for the first time (800 to 1400 metre depths), revealing a rich fauna of bathypelagic species. This is separately reported in the *Annales Biologique*, Volume VI.

Leith (K. M. Rae).

The Continuous Plankton Recorder Survey of the North Sea and the north-eastern Atlantic was continued on a similar scale to 1948; the mileage sampled was about 30,000 miles. Records were taken on the regular routes as follows:—

Hull to Rotterdam	(12 records)	(900 miles)
Hull to Hamburg.....	(9 —)	(1,700 —)
London to Stockholm.....	(9 —)	(2,500 —)
Hull to Copenhagen	(15 —)	(5,000 —)
Leith to Copenhagen	(11 —)	(4,400 —)
Leith to Lerwick.....	(11 —)	(2,000 —)
Glasgow to Weather St."I"	(16 —)	(6,200 —)
Glasgow to Weather St."J"	(14 —)	(5,000 —)
Bergen to Weather St."M"	(6 —)	(1,700 —)
Pentland to Skagerak	(1 —)	(400 —)

Through the co-operation of Messrs Thor Thoresen of Oslo, it was possible to introduce a line running from the Pentland Skerries to the mouth of the Skagerak which should provide a useful source of data in the future. Unfortunately there were no regular sailings between Leith and Iceland during 1949 so no information was obtained on this route; it is hoped that it will be available again in 1950.

General analyses of these samples were completed and the results provided a basis for the comparison of the quantity and composition of the plankton at

10 metres in the open Atlantic waters and the North Sea, and the study of the inter-relationship between the two. The identification of the young fish caught on the plankton records was brought up to date and comparative information about the distribution and abundance of the larvae of the more important commercial fish was so made available. Significant changes during the past four years were apparent and it is hoped that a summary of these can be shown in the *Annales Biologiques*. Further investigations into the hinge structure of the lamellibranch larvae made possible the identification of practically all species which occur in the North Sea plankton. Particular attention was paid to the distribution of these larvae and those of other benthic forms in an effort to locate concentrations of adults which might provide rich feeding grounds for the demersal fish and to record changes in these concentrations. Work on the incidence and seasonal distribution of the copepod parasite, *Blastodinium*, and the size composition of the *Rhizosolenia styliformis* and *Biddulphia sinensis* population was continued.

As in the two previous years, during the Scottish summer herring fishery nightly samples of the plankton on the fishing ground were taken for correlation with the herring catches in their immediate vicinity. For this Plankton Indicators were used by a number of drifter skippers who also provided details of their herring catches. Contents of herring stomachs collected each night were analysed so that the diet of the herring could be compared with the estimate of the plankton made from the Indicator discs.

During the year, the headquarters of the work was moved from University College, Hull, to the Oceanographic Laboratory, 23 Sandport Street, Leith, Edinburgh.

Publications.

Rees, C. B.: "Continuous Plankton Records: The Distribution of *Calanus finmarchicus* (Gunn.) and its two forms in the North Sea, 1938—39." Hull Bull. Mar. Ecol. No. 14. Vol. II, 1949.

Rees, C. B. and Cattley, J. G.: "*Processa aequimana* Paulson in North Sea". Nature 164, p. 367. 1949.

Lowestoft (R. S. Wimpenny).

Between January and May the "Sir Lancelot" made a sequence of cruises in the Flamborough and NE. coast areas. In the earlier part of this period when a plaice egg census was carried out it was found that the number of eggs on the Flamborough spawning ground was approximately one twentieth of the number present on the main Southern Bight ground in 1948. The following cruises continued earlier investigation into the relation between the plankton and the herring of the North Shields fishery. It was shown that the herring shoals as measured by traces on the echo-sounder, corresponded to the areas of abundant *Calanus* revealed by the Hensen net hauls. Numerous zooplankton, phytoplankton, salinity, temperature, phosphate, silica and nitrite samples taken on the cruises have been worked up into a form ready for study. Preliminary observations on the occurrence of flagellates in this area in which both direct observation and dilution culture methods have been used, suggest that these organisms were not present in important numbers.

The Flamborough Line observations were continued but interrupted and incomplete in September, October and December, and missed out entirely in August owing to bad weather. Observations on this line and on the cruises off the NE. coast, indicated that the general development of the plankton was later than usual.

The dry weight and the fat content of the Hensen net plankton were assessed for the Flamborough Line and also for a cruise off the NE. coast in June. For comparable months along the Flamborough Line and for comparable stations of the June cruise, there was a rather lower fat content than in 1948 but the dry weight was slightly higher.

Two exotic species, the Siphonophore *Halistemma* (of Atlantic origin) and *Oikopleura chamissonis* (Arctic), were found on the northern stations of the June cruise off the NE. coast.

Hensen and stramin tow-net hauls were made on the cruises of the "Ernest Holt" in the Barents Sea. It was found that the euphausid *Thysanoessa inermis* was most common in the Arctic water of under 200 fathoms depth, where it was probably the most characteristic item of cod food in waters below 1·5° C. Indications of good plankton production were found on the Hammerfest Bank in April, and on the edge of the Bear Island Bank in July. *Thysanoessa inermis*, *Limacina helicina* and *Sagitta elegans arctica* appeared to indicate Arctic water, while *Thysanoessa longicaudata*, *Limacina retroversa* and *Eukrohnia hamata* were characteristic of Atlantic water.

The collection of Atlantic plankton samples has been continued from Ocean Weather Ship positions "I" and "J" using the same methods as last year. Whilst the aim is to take these samples weekly, interruptions due to weather and other causes reduced the number of samples by about twenty-five per cent.

Millport (S. M. Marshall).

Dr. H. Barnes, to test the suggestion made by Winsor and Walford (1936) that the variability in replicate plankton hauls was dependent on the variation in the volume of water filtered, used a pump, in which the volume was carefully controlled, to take samples. He found that the same variability both in amount and form, was still obtained and suggested that some cause other than variable volume should be considered, and that in particular attention should be paid to the form of distribution of the animals.

In co-operation with Miss Marshall a large number of samples were therefore taken by pump, using small aspirators to obtain known volumes. It has been possible to obtain frequency distributions of the numbers of organisms per sample and, using

these data, it has been shown that much of the sampling variation is inherent in the distribution of the population. Both in February and in May copepod nauplii formed the bulk of the plankton population.

Small samples were also taken consecutively over several miles and these give further information on "patchiness".

Dr. Barnes has continued his work on testing the variability of replicate samples, particularly with Hardy Recorders and Indicators. During these tests it was shown that barnacle larvae were widely and more uniformly dispersed than is usually regarded as normal. Previous results are probably in error owing to sampling from inshore structures close to a large parent population. No evidence was obtained that the late stages of barnacle development are in any way interfered with by a heavy diatom outburst. Settlement of barnacles has been observed and self destruction caused by overcrowding would appear to contribute in part to the periodicity in the production of barnacle larvae.

Dr. D. T. Gauld, in collaboration with Prof. J. E. G. Raymont of University College, Southampton, has made measurements of the respiratory rates of several species of copepods, ranging in size from *Centropages hamatus* (Lillj.) to *Euchaeta norvegica* Boeck. Particular attention was paid to *Calanus finmarchicus* (Gunn), and the respiratory rate found for Copepodite V of this species agreed with those found by earlier investigators. Over the whole range of species, the respiratory rate could be directly related to the linear dimensions to the power of 2·25.

Measurements have been made of the feeding rates of a number of planktonic copepods; again with particular emphasis on *Calanus*. The filtration rates found are very much larger than those found by Fuller and Clarke (1936) or Fuller (1937) but are of the order of magnitude of those reported by Harvey (1937). Copepodite V of *Calanus* for instance was found to sweep clear of particles a volume of 71 ml. per day. Further investigation is required before these measurements can be safely related to food requirements. Some evidence was found of a diurnal rhythm in feeding activity, which in the field appears to be related to vertical movements. These investigations are continuing.

Miss S. M. Marshall and Dr. A. P. Orr have done some work on moulting in *Calanus*.

Plymouth (F. S. Russell).

Dr. H. W. Harvey has now sufficient evidence to show that it is possible to distinguish one water mass from another in terms of its potential fertility by estimation of total phosphorus. There is evidence that the potential fertility is rather closely related to the actual productivity of a water mass. In line with this work and in order to obtain accurate samples of zooplankton he has made further experiments with meters to measure the flow of water through the nets. It is found that provided the ratio of the filtering area of the net to the size of its mouth exceeds a limiting value, substantially the same flow of water is registered when the net is hauled through the same distance of water, irrespective of the position of the meter in the mouth.

Mr. P. G. Corbin has continued the regular collections with the 2 m. ring-trawl; the numbers of young fish in 1949 showed no marked change from the very low level of production observed in 1948.

Dr. Mary Parke has made a study of the small coloured flagellate and non-motile forms present in sea water. Many of these minute species remain undescribed, and in order to obtain satisfactory material for description organisms are being cultured from samples of sea water taken at intervals during the year. Observations made during 1949 indicated that flagellate forms belonging to the Chrysophyceae are most abundant from November to May, while those belonging to the Cryptophyceae (mainly with red pigment) are most common from June to October.

Port Erin (D. I. Williamson).

The main work has been a study of plankton distribution in relation to hydrographical conditions, by making periodical collections along a number of lines radiating from the south of the Isle of Man. Hardy Plankton Indicators have been used as the main sampling method. Two main water masses can be recognised from the plankton distribution:— (1) an eastern mass of coastal water, and (2) a south-western mass of mixed oceanic and coastal water. The boundary between these masses shows considerable movement, probably to a large extent seasonal.

Observations on the vertical distribution of plankton, using Hardy Indicators and tow-nets, have provided strong evidence for a region of local upwelling off the south-east coast of the Island. A more detailed study of this region, including sampling at various depths by pumping, is planned.

Observations on the plankton in the region of herring shoals to the west and south-west of the island were made during the late summer.

A study of the distribution and growth of larval herring in the eastern Irish Sea, begun in 1948, has been continued, and the food of these larvae is also being investigated.

Holland.

(B. Havinga.)

During 1949 the only plankton investigations have been on the eggs and larvae of fishes. This work is included in the report of the Southern North Sea Committee.

Norway.

Bergen (Kr. F. Wiborg).

As in the previous year zooplankton was collected with the Clarke-Bumpus plankton sampler and the Nansen net on the banks and along the coast of

northern Norway during the spring. Special attention was paid to the distribution of eggs and larvae of fish, especially of cod. The material of fish eggs and larvae collected during the spring of 1948 and 1949 has been worked up, and a preliminary report (in Norwegian) is in press.

In the beginning of June 1949 some hauls were made with the Nansen net during a cruise from North Norway to Bear Island.

Collections of zooplankton with the Nansen net are now made at more or less regular intervals, mostly weekly or fortnightly, at four fixed stations, inside and outside the Lofoten area in North Norway and at Ona and Sognesjöen on the west coast. As regards the Lofoten area, plankton material covering a whole year has been worked up.

In connection with the investigation of a local tribe of herring, collection of zooplankton is being made at weekly intervals with the Nansen net in the Luster fjord on the west coast.

Plankton samples were taken with the Nansen net in some fjords on the west coast from April to the middle of July in connection with the investigation of biology and food of the sprat. The material has been worked up and is ready for printing (KÅRE GUNDERSEN).

The plankton material collected in horizontal hauls with a meter net in the Skagerak area during the previous summer is now being worked up with regard to the fish eggs and larvae (GUNNAR DANNEVIG).

University of Oslo (Biological Laboratory)
(TR. BRAARUD).

The examination of quantitative phytoplankton samples from the oceanographic stations along the western coast of Norway was finished (K. R. GAARDER, O. NORDLI). The material is being prepared for publication.

Phytoplankton material from weather ship "M" has been examined, but still $^1/_3$ of the samples remains (P. HALLER NIELSEN).

Quantitative samples of phytoplankton from the North Sea survey, May 1948, are being examined (K. R. GAARDER, O. NORDLI). (Cpr. also report from Denmark).

The preparation for publication of the Oslo fjord material on vertical distribution of dinoflagellates was continued (G. R. HASLE).

Experimental work on dinoflagellates was continued (T. BRAARUD, O. NORDLI).

Zooplankton material from weather ship "M" covering one year was sorted and part of it worked up. The examination continues (O. J. OSTVEDT).

Sweden.

(H. HÖGLUND).

No plankton investigations have been undertaken during 1949.

HERRING COMMITTEE

1949

By

W. C. HODGSON

THE following reports on the work done by the member countries during 1949 have been submitted, and from these accounts it is evident that many practical problems in connection with the herring fisheries are being tackled.

Work on fish stocks is progressing and it is gratifying to record the noteworthy successes which have resulted from the various tagging experiments. Echo-sounding, too, is beginning to play an increasingly important part in the researches and important advances in the use of this technique have been made.

Belgium.

(CH. GILIS.)

The study of the full herring concentrations has been continued and 22 samples, comprising 1,320 herrings have been examined from the Fladen Ground, the Gut and Brucey's Garden. The detailed study of the fish dealt with the following points: length, weight, sex, mesenteric fat, maturity, age and length l_1. The value Vert. S and the number of cervical vertebrae were also obtained, and character K_2 was studied. Stomach contents were also examined.

The spent herring concentrations were also examined and a further 1030 fish were dealt with. It was found that the 1946 and 1945 year-classes were the best represented, a fact which may favourably influence the results of the coming seasons.

Denmark.

(Å. V. TÅNING, Å. J. C. JENSEN and P. JESPERSEN.)

By help of the m/c "Sinne Bjerregård" which carried out experimental trawling on herrings on the Fladen Ground and adjacent waters some collections

of *inter alia*, measurements, scales etc. of herring were secured, and some herring were marked. About 5000 herring were measured and analyses were carried out on about 650 Fladen Ground herring in June and August. Moreover 280 herring were marked with a new plastic mark of a bright red colour fixed by a thin silver wire in the back of the herring just anterior to the dorsal fin. Of the marked herring 4·6 % were later recaptured, most on the Fladen Ground and its vicinity, two near the northern border of the Dogger Bank, and one (in March 1950) off Skaw in the Skagerak.

Examinations into age, length, maturity, race, etc. were carried out (a) on commercial catches from the Fladen Ground in July as well as from the Skagerak and the inner Danish waters, and (b) on samples of small herring for processing at Esbjerg and on catches made in the Skagerak and the inner Danish waters. The number of spring spawning and autumn spawning herring was investigated by means of ring-trawl fishing in the Belt Sea and adjacent waters. In October 300 herring were marked at Kerteminde in the Great Belt and 100 herring in Køge Bight in the southern Sound.

For several years, investigations on the food of the herring in the waters round Bornholm have been carried out. These investigations have been continued in 1949 and the total number of examined herring stomachs has now amounted to about 9000. Herring stomachs have been collected and preserved as regularly as possible during the whole year. The contents of the stomachs have been measured and analysed with a view to recording the changes in the quantity and composition of herring food in these waters in the different seasons and from year to year. It has been shown that there are considerable variations in the quantity from year to year, but that the composition of the food shows the same seasonal cycle each year. It is the intention as far as possible to continue these investigations for several years in the future.

An examination of the stomach contents in a sample of herring caught in August 1948 over deep water NE. of the Faroes (63°15′ N., 04°27′ W.) has shown that *Ammodytes* was the most important ingredient in the food of the herrings. The depth at the place was 2200—2400 m.

England.

(W. C. Hodgson.)

During 1949 the general work of examining the herring shoals of the east coast has been continued. From the Northumberland coastal fisheries 2510 herrings were dealt with in detail, as well as 2169 fish from the Whitby coast.

In examining these herrings special attention has been paid to the work of establishing growth types for the two areas, with a view to dividing the coastal shoals into biological groups.

At Lowestoft and Yarmouth 2800 fish were examined to provide material for the annual forecast and in addition, 143,100 were measured on the markets.

The collection of samples of 0-group herring in coastal waters has been continued with a view to establishing growth types, and further work on the practical use of echo-sounders has been done. In this connection, a simple method of surveying a fishery has been devised, and tests on the Northumberland coast and in the Channel have proved successful.

The three research ships, "Onaway", "Clupea" and "Sir Lancelot" have all taken part in the work at sea throughout the year.

France.

(J. Ancellin.)

The annual observations on length, age, maturity and Vert. S of the herrings of the southern North Sea and eastern Channel have been continued.

The spent herring fishery of the Belgian and Dutch coasts in January and February, has, in recent years, become less and less productive and it may be that either abnormal hydrological conditions (very high salinity during last winter) or the increased exploitation of the full herrings has been the cause of the decline. Future research will give the answer.

The study of the growth of the immature herrings from the Baie du Mont St. Michel—mostly the 0- and I-groups—has been continued.

Holland.

(B. Havinga.)

The work on herring in 1949 consisted of the drawing of herring charts on the fishery in 1948 and some investigations on echo-sounding.

The echo-sounding on the East-Anglian grounds has mostly been done in close co-operation with the English investigators, and some echo-sounding is being done on the shoals of spent herring off the Belgian coast. The results so far obtained show that the work should be continued.

Iceland.

(Á. Friðriksson.)

Work on the herring was continued along the same lines as in previous years. The station at Siglufjord was run from the beginning of July to the middle of September. 3683 herring were examined here, with regard to length, weight (in most cases), sex, sexual maturity, number of vertebrae, intestinal fat, and age and origin, these last two being determined chiefly according to the structure of the scales. Besides these, 309 herrings from Faxa Bay were examined in the period April to June, and 100 from Fáskrúðsfjord (E. Iceland) in August as well as 402 herrings caught by the Norwegian research vessel "Vartdal" in the areas 62°47′—5°40′ and 63°23′—

7°48′. This brings the number of herring examined to a total of 4494.

1180 herring stomachs were investigated in Siglufjord.

No herring could be tagged this year, but 50 tags were recovered from the Icelandic marking experiment of 1948 and 1 from the Norwegian experiment of the same year.

Ireland.

No report.

Norway.

(O. Aasen and A. Dannevig.)

In 1949 8241 herrings were tagged in Norwegian waters during the spring herring season (21st February —16th March) at Trosnavåg in Karmsund (59°13′ N., 05°22′ E.).

A comparatively small number of the Norwegian herring meal factories were fitted with magnet separators for recovering of the tags during the winter herring season of 1949. At the beginning of the season only one of the larger factories was fitted and towards the close of the season three more. Later in the year twenty-two factories were fitted with magnets, the total 24 hours capacity in the end of 1949 being 87,000 hl.

Owing to reasons stated above, only six tags were recovered during the season 1949. One of these was liberated at Iceland, 1948. During the summer, one additional recovery was reported from Iceland, the herring being tagged at Karmsund 1948. Of the rest of the recovered tags three were liberated in the spring herring district in 1949, and two were liberated in the same district in 1948.

This year (1950) some 50 tags have been recovered, of these eight were liberated at Iceland in 1948, thus supporting Mr. Friðriksson's theory that the summer herrings off the north coast of Iceland belong to the same tribe as the Norwegian winter herring. Also it is demonstrated that spring herring from the south coast of Norway appear in abundance amongst the large herring further north on the coast, this being in disagreement with Dr. Runnstrøm's theory that the spring herring and the large herring of Norway are different tribes.

Samples of herring have been collected from different parts of the Skagerak coast.

Scotland.

(H. Wood.)

Investigations were continued in the Forth area during the early months of 1949, and although hydrographic conditions showed no unusual features the adult stock of spring spawners still remained very sparse. The most promising feature in the herring population of the estuary was the abundance of small herring derived from the autumn spawning of 1947.

The investigation of the northern North Sea stock began with the sampling of commercial catches caught in the neighbourhood of the "Coral Bank" (about 58°30′ N., 03° E.) in March and April. These herring consisted of ripe or newly spent spring spawners and recovered spent autumn spawners.

The drift-net fisheries at Shetland and off the east and north-east coasts of Scotland failed badly after mid-June. The grounds were sampled by "Clupea" although the early failure of the shoals affected both the scope of sampling and tagging.

Although herring of the spring-spawning type were scarce throughout the north-western North Sea the failure of the fishery after mid-June was due to the scarcity of adult autumn-spawning herring. The most conspicuous year-classes among the small stock of autumn spawners were 1941, 1942 and 1944. It was clear that no very successful year-class had emerged since 1941 and 1942.

Extensive echo-sounding surveys were made. One survey made between Aberdeen and Bressay Bank at the end of June, when the fishery within 50 miles of the coast had already collapsed, revealed numerous herring shoals to the west of the Fladen but beyond the economic range of Scottish drifters.

A total of 900 herring were tagged on the drift-net grounds and in connection with the above echo-sounder survey it is noteworthy that of four recaptures three were recovered by trawlers on the Fladen Ground in July and August.

Sweden.

(H. Höglund.)

In March 525 herrings were marked with the new Lea mark and released at the northern part of the west coast of Sweden. Up to the present, twenty recoveries have been obtained. In the last half of August 399 herrings were tagged and released on Fladen Ground area. Of these only two were recaptured.

Herring samples have been taken and analysed from commercial catches as well as from catches made by the "Skagerak" on the Fladen Ground, in the Skagerak and in the inshore waters of the Swedish west coast.

Hydrographic observations on two sections in the Skagerak (between Pater Noster and the Skaw and between the Skaw and Torungen) have been done every month. In addition some sporadic hydrographic data were collected off the Swedish west coast.

Baltic Herring: A great many fishing experiments were made in order to study the stock of herring in the Swedish archipelagoes off the coast and in the open sea as to composition changes and distribution. Samples from all parts of the area were collected and analysed for race, age, and time of spawning.

SALMON AND TROUT COMMITTEE

1949

By

KNUT DAHL

Belgium.

No report received.

Denmark.

(C. V. OTTERSTRØM and ERIK M. POULSEN.)

1. Biological Investigations.

The biological investigation of salmon and trout rivers has been continued with the aim of preparing satisfactory schemes for the liberation of salmon and trout fry and fingerlings. Plans for the following rivers were completed: Fladså and Tryggevælde å in Seeland, Vejle å in Jutland.—Investigations on the life history of sea trout and brown trout have been carried out. Samples of scales and stomach contents of trout from various rivers have been collected and partly analysed, and migration studies have been made.—Tagging of 104 sea trout was performed in the river Lindenborg å. 63 of these were spent fish, some of which had been used for artificial propagation, 35 were maiden silvery sea trout on their seaward migration and 6 were smolts. Celluloid tags were used. These were fastened to the back of the fish just behind the dorsal fin.—100,000 salmon fry from Sweden were, as in the previous three years, liberated in the river Gudenå. Tagging of salmon has been carried out in the Baltic and scale samples have been collected from Baltic salmon on board Danish fishing boats as well as from landings in Copenhagen. A number of small trout brooks, belonging to the Gudenå, Kongeå and Tude å river systems, have been studied by means of electric fishing in order to determine the number of fish and the age composition of the stocks of trout and eels. The investigations on the grayling have been carried on.

2. Artificial Propagation.

As usual, hatchery operations were carried out at a number of centres by various fishing clubs and a few power stations, partly with support from public funds and partly compensated for by the permission to catch salmon and trout during the ordinary close time. Fry and fingerlings, especially of sea trout, have been liberated in rivers with free access to the sea or in estuaries.

3. Statistics.

The collection of information about the output of the salmon and sea trout fishery as well as the weight of individual salmon and sea trout in the river Gudenå and the Randers fjord has been continued, and has been supplemented by similar investigations in a few other waters in order to elucidate the age composition and length variation of the stock of sea trout.

4. Publications.

JENSEN, INGER BOHUS: Biological Investigations on the Smelt (*Osmerus eperlanus* L.). Vidensk. Medd. fra Dansk naturh. Foren., Bd. 111, 1949.

Éire.

(A. E. J. WENT.)

1. Biological Investigations.

During 1949 investigations were continued into the age and growth of salmon from the Rivers Shannon and Owenea. In addition further progress was made with material relating to the salmon stocks of a large number of Irish rivers collected in the year 1946, but at the close of the year this investigation had not been completed.

During 1949 salmon tagging was carried on at four places on the Irish coast. Tagging was repeated at Achill and a new station was established there. At two of these stations Dooega and Keel salmon were captured by means of bag nets and at the third new station at Keem Bay, draft nets were used for the capture of fish. A new station was also established at Baginbun in County Wexford in the south-east of Ireland. At this station a bag net was used for the capture of salmon. In all 528 fish were tagged of which 12 were sea trout. Of these 188 fish were tagged at Keem; 140 at Keel; 74 at Dooega and 126 at Baginbun. Up to the end of the year 155 recaptures had been made as follows: (1) from fish tagged at Keem 50 recaptures; (2) from Keel 34 recaptures; (3) from Dooega 23 recaptures and (4) from Baginbun 48 recaptures.

Most of the fish tagged were grilse and the majority were tagged in the month of June. Notable recaptures were as follows: One fish tagged on 22nd June at Keem was recaptured on the 14th July at Creetown in Scotland, a minimum distance of 578 km. which was accomplished at the speed of 26·2 km. per day. Another fish tagged at the same place two days later was recaptured on the 15th July in Loch Feochan, near Oban in Scotland, a minimum distance of 480 km. at speed of 19·4 km. per day. A third fish tagged at Keem on the 11th June was recaptured at Red Bay in County Antrim in Northern Ireland, having travelled a minimum distance of 368 km., at a speed of 46 km. per day. A fish tagged at Keel on 22nd June was recaptured on the 14th July on the River Bann near Coleraine, a minimum distance of 200 miles from the place of tagging.

Fish tagged at the three stations on Achill made movement along the Irish Coast in a southerly and northerly direction. Fish tagged at Baginbun with one exception travelled in a south-westerly direction. In due course a full report will be made on the 1949 tagging and copies will be circulated to the members of the Committee. In the meantime details have been submitted to the Chairman of the Committee for preliminary treatment.

In the year 1942 a collection of material relating to the brown trout of a lake in the south-west of Ireland was made, and during 1949 this was investigated further. Additional material was collected from a number of other lakes in the west of Ireland.

2. Artificial Propagation of Salmon and Trout.

Hatchery operations were again carried on at a large number of centres during the year. The output was generally speaking considerably in excess of that of the previous year. For the second time in succession imported ova were obtained from Great Britain.

3. Returns of Catches.

Returns of catches were demanded from every holder of a licence to fish for salmon in 1949 and these returns are now being compiled. The figures for 1948 were completed during the dear. The catch recorded was approximately 950 tons, or approximately 200 tons greater than in 1948. As mentioned in previous reports the export figures published monthly by the Department of Industry and Commerce give some idea of the relative abundance of salmon. In 1949 884 tons of salmon were exported to Great Britain, compared with 887 tons in 1948. Owing to the drought salmon did not enter the estuaries of many rivers at the normal time and fishing consequence was delayed by two or three weeks. As far as can be ascertained, the run of salmon, and particularly of summer fish were good. Drift-net fishing on the north and north-west coast gave satisfactory results albeit somewhat less than the captures in 1948.

England and Wales.

(F. T. K. Pentelow).

In 1949 the tagging of salmon in the sea at Whitby, North Yorkshire, was continued in accordance with the decision of the Committee at Stockholm in 1946. Twenty salmon and nineteen sea trout were tagged during the months of May and June. Ten tagged fish, 8 salmon and 2 sea trout have been returned.

Seventy-nine sea trout were also tagged off the coast of Suffolk during July and August. Three have been returned.

Finland.

(T. H. Järvi).

The yield of the salmon fishery in 1948 and 1949 has been declining.

Material for scale analysis has been collected in the Oulu River (at the town Oulu).

The following numbers (in thousands) of salmon fry and one-summer-old parr have been liberated:—

Year	Oulu River		Kemi River		Kokemäki River	Kymi River
	fry	parr	fry	parr	fry	parr
1948...	67.1	6.1	806.4	25.8	124.3	3.0
1949...	167.3	8.3	950.0	24.5	106.6	—

France.

(R. Vibert).

1. Recherches Physiologiques et Biologiques.

Les recherches entreprises sont poursuivies. Une première série de résultats sera publiée en 1950 aux *Annales* de la Station Centrale d'Hydrobiologie appliquée.

2. Propagation Artificielle du Saumon.

Un million d'œufs récoltés pendant l'hiver 1948—49. 50,000 seulement en 1949—50.

3. Prises de Saumons.

Captures importantes en 1949 sur toutes les classes d'âges.

4. Publications.

Fontaine et Leloup. 1950: Sur l'iodémie de deux Téléostéens migrateurs potamotoques — *Salmo salar* L. et *Alosa alosa* L. au début de leur montée reproductrice. C. R. Ac. Sc. 1950, t. 230, p. 775.

Holland.

(G. J. Lienesch).

During 1949 no special investigations were done on salmon and trout.

There has been some salmon fishing on the Rhine in the past year, but this fishery was ended by a fatal pollution with water from the Ruhr tributary in the middle of July.

Should there be any possibility of rebuilding of the stock of Rhine salmon it is necessary to arrive at an agreement with the countries concerned.

Statistical data of the catches of salmon on the Rhine are, up till now, of rather doubtful value.

Regarding the Netherlands catches the estimate is about 1,000 mature salmon prior to the above-mentioned pollution.

There has not been any artificial propagation of Rhine salmon either abroad, or in the Netherlands.

Iceland.

(Þór Guðjónsson).

Some 700 samples of salmon scales were collected for growth studies and age analysis. These were mainly from salmon caught in the rivers mentioned in previous reports. Tagging of salmon was continued. Due to unfavourable weather conditions, the catch of smolts in the river Ulfarsá was very poor, resulting in only 60 smolts being tagged. The tagging of kelts was also affected by bad weather. 139 kelts were tagged, of which 10 were caught in the river Ulfarsá and 129 in the river Elliðaár. 101 of the tagged kelts from the river Elliðaár were liberated there and 28 were released in the river Flokadalsá in Borgarfjörður district. All the salmon were tagged with ebonite tags. 88 sea trout were marked on their downstream migration in the river Ulfarsá by cutting fins (the adipose and the right ventral).

Hatchery operations were carried out at five centres. Ova were secured mostly from salmon, but also from sea trout and lake char.

The salmon catch was about average.

Norway.

(L. Rosseland.)

The salmon and trout research work has been carried on largely along the same lines as in previous years. The only difference is that river research has been more stressed than previously.

In the Lerdal River, one of our best salmon rivers, we attempted during Easter 1949, to catch and tag a fair number of salmon kelts. As no other suitable gear was available, the fish were taken with the fly, on rod and line. Altogether, we tagged 35 salmon and 2 sea trout kelts, and of these, up to May 1950, 3 recaptures of salmon had been recorded, one in the Lerdal River, one at Larvik in Sogn and one at Lebesby in Finmark.

In the Sanvik River, near Oslo, we built, as in previous years, a temporary fence to enable the counting and tagging of migrating smolts in the beginning of May. Owing to heavy floods, the fence was broken on the 17th May and the repairs and rebuildings were not effected until two days had elapsed. In all we marked, by fin cutting, 590 salmon smolts and 518 sea trout smolts. A corresponding number were liberated without tags or marks. A considerable number of smolts must be supposed to have migrated during the days when the fence was down.

At the end of July we built a trap in the salmon ladder at Franzefoss, about 2 km. higher up the river. At this locality all ascending fish—19 salmon and 1149 sea trout—were tagged. During the same summer 39 trout and 1 salmon were reported as recaptured. At the present time, May 1950, we get daily reports of recaptures from this tagging.

In the Istra (in Romsdal) where the fence last year had been carried away by the flood, we built in 1949 a very strong fence, which, however, was built so late, that only 12 fish could be tagged.

At the hatchery in Grimstad we tagged 73 sea trout (brood fish). At the same time 215 freshwater trout were tagged and transferred to the sea. The salinity in the localities where the fish were liberated varied from 2 to 31 $^0/_{00}$.

At Sjaastad in Lier Elv we tagged 66 rod-caught sea trout, and in the Aurland in Sogn 18 salmon and sea trout were tagged while capturing brood fish in the river.

Taggings in the sea were continued at the same two stations as in recent years, Kinn and Titran. At Kinn we tagged 172 salmon and grilse, and of these 112 have been recaptured, a very high percentage (65) for a coast station. One of the fish was recaptured abroad, viz., in the North Esk River, near Montrose.

At Titran, we tagged 145 salmon and grilse of which up to the present, 45, or 31 $^0/_0$, have been recaptured, all in Norway. A considerable number of salmon stomachs and sex organs have been collected at Kinn.

Poland.

No report received.

Scotland.

(C. E. Lucas.)

Much of the research on salmon has been carried out on the Forss Water, Caithness, where the comprehensive programme of work on the freshwater phases in the life history of this fish, first started in 1939, has been resuscitated. Continuous work began early in April and one trap (at Forss Bridge) was in operation from early May onwards; a further trap (in Torran Water) was brought into use during September. The lay-out of the trap in Crosskirk Bay has been modified and this trap was ready for working early in 1950; plans have been made for a further trap below Loch Shurrery which will be constructed as soon as water conditions permit.

The season's work on the Forss cannot, unfortunately, be regarded as typical, partly because the series of traps was incomplete, but chiefly because of abnormal weather conditions. A period of drought during June and July undoubtedly affected the smolt run and the severe floods which occurred subsequently may have interfered with the census of ascending adults. In all, 298 adults were tagged at Forss Bridge and 2034 smolts were marked at the same site; the latter represents only a fraction of the total smolt run for the river.

It did not prove possible to continue salmon

tagging work in the sea at the two stations near Montrose at which tagging operations had been carried out in 1948, but plans are well advanced for the resumption of this part of the International Tagging Experiment in 1950.

A short programme of kelt tagging has been carried out in the River Dee (Aberdeenshire) during November and December 1949. 422 fish were tagged (221 males and 201 females) and 91 tags had been recovered by the end of February. Most of these were recovered from fish which had died in the river shortly after tagging. A similar programme of kelt tagging has been arranged for the River North Esk early in 1950.

Work on brown trout at Pitlochry has proceeded generally along the lines indicated in the report for 1948. A year's survey of environmental conditions in selected hill streams, which has included studies of seasonal changes in the bottom fauna, has been completed and observations at many of the sampling sites are being continued for a further season. Additional sampling sites are being operated during 1950. These field observations have been supplemented by laboratory studies of the growth rate of trout and tank investigations of tagging methods for small fish. A technique has been devised for marking single silver wires so that individual fish can be identified among batches of several thousand; this method seems one of considerable promise for use with young trout.

Preliminary field experiments, which will be extended during 1950, have been made on the use of electrical methods for stunning fish and trials have also been made of the use of rotenone in the control of pike under suitable conditions.

Loch work has chiefly been confined to surveys of the zoo- and phytoplankton, though surveys of the littoral and sub-littoral bottom fauna have been begun. The plankton surveys have been designed partly to investigate the degree of difference, both in content and in seasonal change, between the lochs of the Pitlochry area and partly to gain some idea of plankton productivity, in preparation for later work on methods of increasing production. The study of the plankton of each loch is therefore general rather than particular, but special attention is being paid to quantitative methods of sampling.

It is expected that the new Pitlochry reservoir will be formed during 1950 and botanical and soil surveys have therefore been made of the area which is to be inundated. Neither have indicated any particularly unusual feature of the area which will be flooded, but a detailed knowledge of the region which will form the bottom of the new reservoir will doubtless be useful later.

Sweden.

(Jöran Hult).

1. Biological Investigations.

Most of the investigations have been carried out by the Migratory Fish Committee in close co-operation with the Board of Fisheries and Fishery Research. New methods for hatching and rearing are undergoing trial, aiming i. a. at making it practicable to release two- or even one-summer-olds directly at the coast of the Bothnian Gulf and the Bothnian Sea, thus avoiding a great many natural losses during the young salmon's freshwater life. The previous experiments concerning the transporting of salmon with motor trucks to areas otherwise inaccessible to salmon have been successful, as it has now been established that salmon parr occur in areas where the salmon were released. In five fish-ways electrical photocell recorders have registered the ascending individuals. Salmon ascending the river Indalsälven have been tagged, and this experiment combined with previous results of similar tagging experiments in other rivers has given information as to the fishing intensity in the rivers. Salmon used for artificial propagation at a number of hatcheries have been tagged and liberated and the results from recent years have given us a fairly good knowledge about the migrations of the Baltic salmon. It is hoped that an account of these kelt-tagging experiments will soon be published. 308 two-summer-olds have been tagged, half being released in the river Ljungan and half at the coast. Furthermore, 43,000 summerlings from three different rivers have been marked by fin-cutting. Scales have been collected from salmon in different rivers and from salmon caught in the Baltic. Further investigations on the enemies of the salmon fry have been carried out. The possibility of injuries to smolts due to pressure differences during the passage through large turbines has been investigated and further experiments are planned.

2. International Co-operation.

Through the invitation of the Migratory Fish Committee a meeting with biologists and hydroelectric-power technologists from Denmark, Finland, Norway and Sweden took place in Stockholm in February. The question of whether there is overfishing of salmon in the Baltic was discussed by fishery representatives from Denmark, Finland and Sweden at a meeting in Denmark at Hindsgavl in May.

Spain.

No report received.

Addendum.

With regard to the following passage in the Committee's report from the Edinburgh meeting: "The Chairman was asked by the Committee to survey the whole work so far carried out by the various countries that co-operate in the international scheme and report to the Committee next year." I regret to say that illness has prevented me from performing this rather arduous task during last winter.